JANUARY '57

MODERN TEXTILES

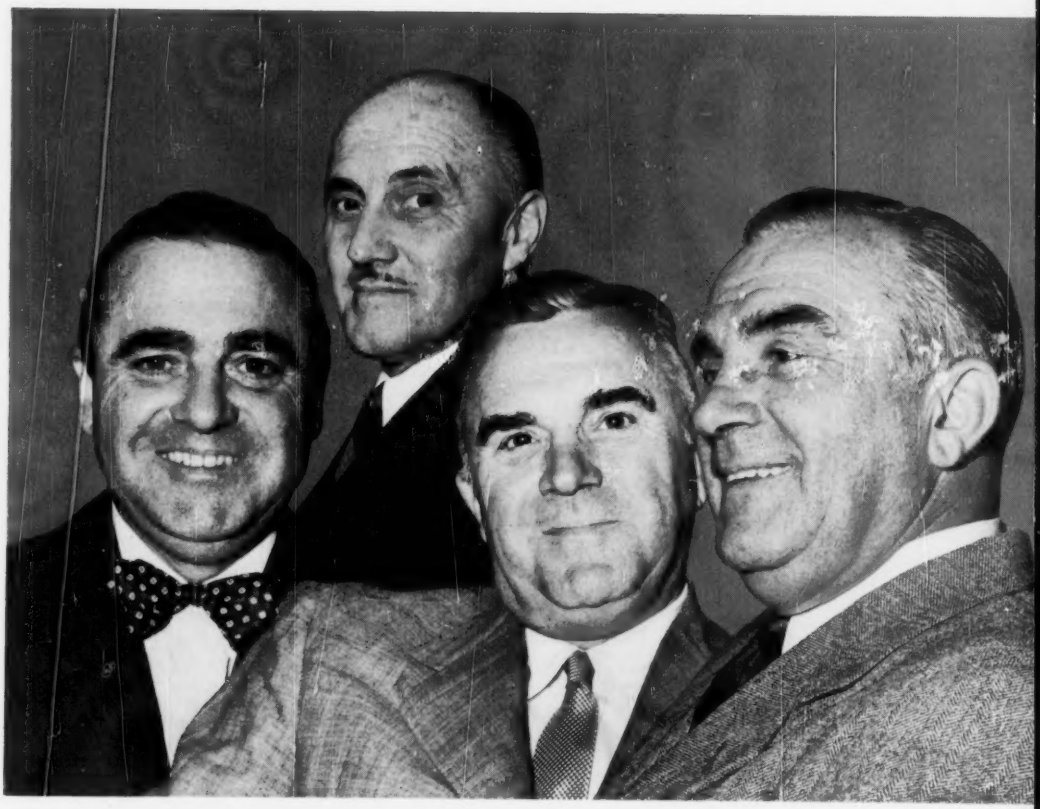
MAGAZINE

Specializing in Man-Made Fibers and Blends since 1925

FIBERS

FABRICS

FINISHES



EDWARD, CHARLES, FRANK and BILL IX of Frank Ix & Sons-- for their story see page 33

THIS MONTH'S SPECIAL FEATURES

Filter cloths-new synthetics use

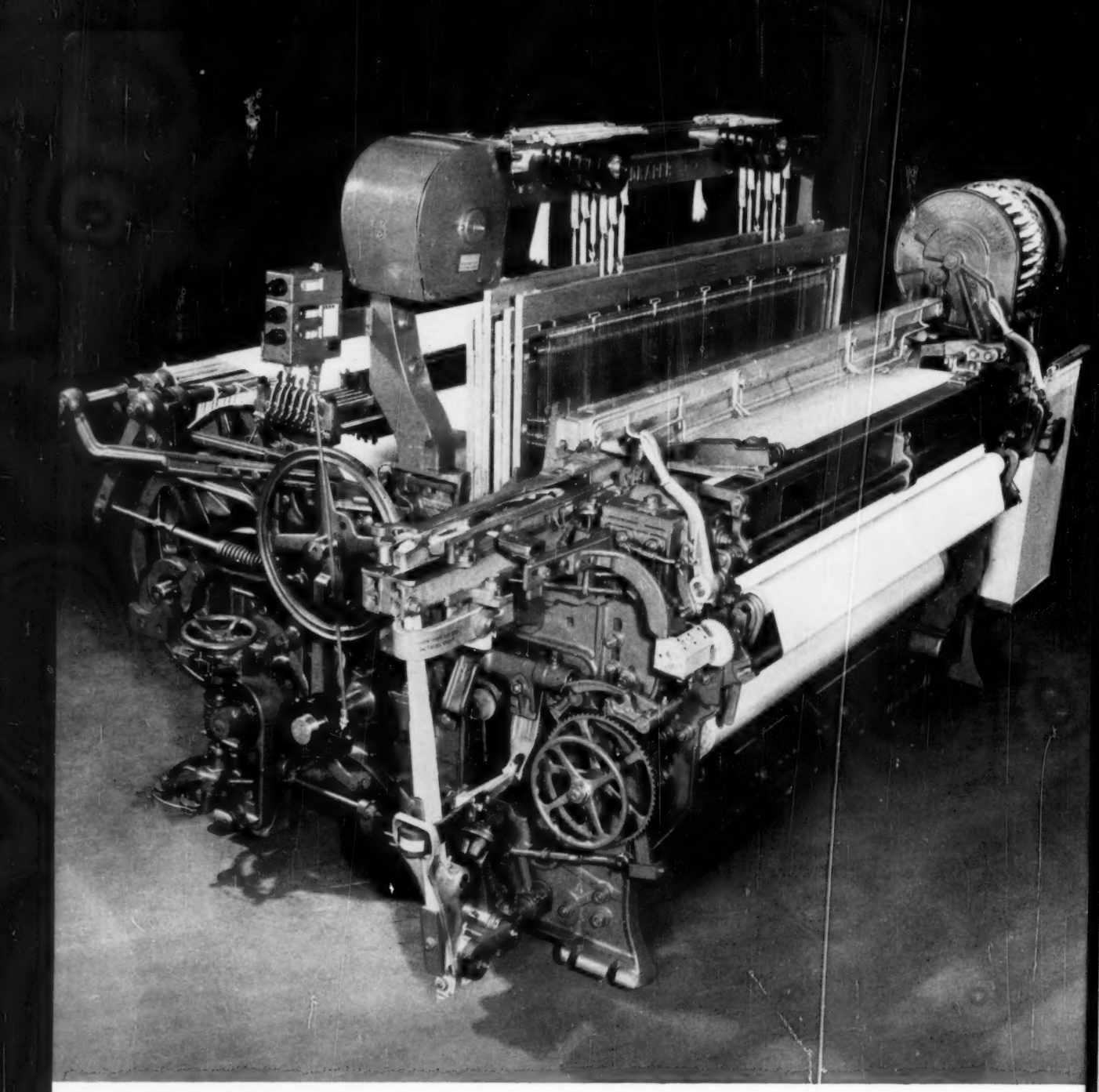
New trends in pile fabrics

Spinning fine count Orlon yarns

Acrilan and Dynel in carpets

Durable anti-static finish

AND 14 MORE TIMELY ARTICLES AND EXCLUSIVE REPORTS



This loom gives you all the competitive advantages

Long range flexibility, practical and economical operation, higher production, increased efficiency and a new low in maintenance cost are major benefits offered by the new Draper X-2.

The changing fashions in cotton and synthetics create a need for a loom which can be converted on short notice to weave a wide variety of fabrics.

The X-2 with its ability to weave cottons or synthetics equally well, answers this conversion problem.

The combined advantages of the Draper X-2 mean . . . higher mill profits.

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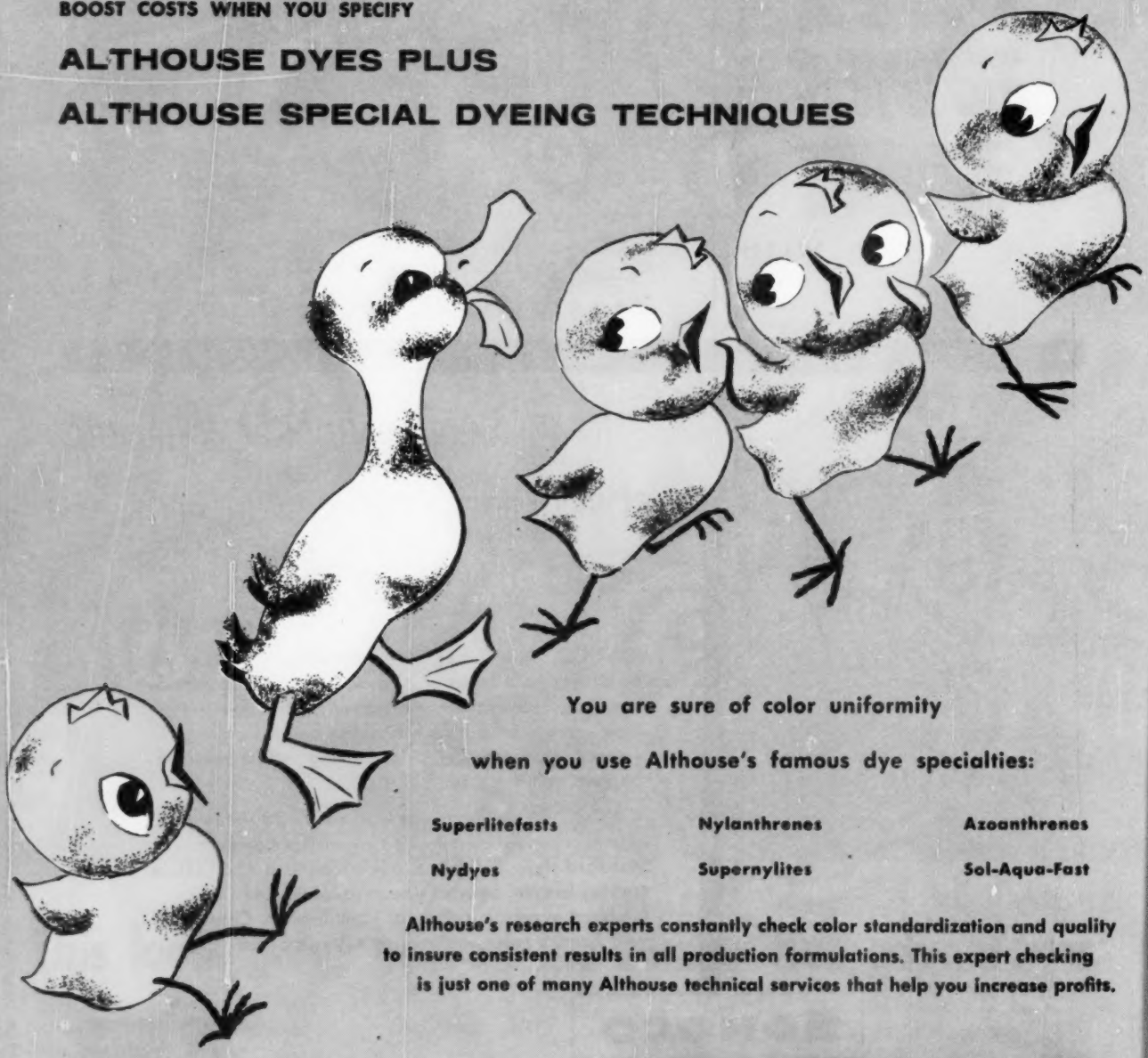
UGLY DUCKLING

COLORS THAT MAR UNIFORMITY, DELAY PRODUCTION,

BOOST COSTS WHEN YOU SPECIFY

ALTHOUSE DYES PLUS
ALTHOUSE SPECIAL DYEING TECHNIQUES



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Superlitefasts	Nylanthrenes	Azoanthrenes
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ALTHOUSE CHEMICAL COMPANY • READING, PA.
DIVISION OF CROMPTON & KNOWLES CORPORATION

MODERN
TEXTILES MAGAZINE*

January, 1957 Vol. 38, No. 1

Modern Textiles Magazine
Established 1925

* * *

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* Registered U.S. Pat. Office.

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The Principal Trade Groups

Rayon and Acetate Fibers Producers Group ..... Empire State Bldg., New York
National Federation of Textiles, Inc. ..... 389 Fifth Ave., New York
American Association of Textile Chemists and Colorists ..... Lowell Techn. Inst., Lowell, Mass.
American Association for Textile Technology, Inc. ..... 100 W. 55th St., New York
Silk and Rayon Printers and Dyers Ass'n of America, Inc. ..... 1450 Broadway, New York
Synthetic Organic Chemical Manufacturers Association ..... 41 E. 42nd St., New York
Textile Distributors Institute, Inc. ..... 469 Seventh Ave., New York
American Rayon Institute ..... 350 Fifth Avenue, New York

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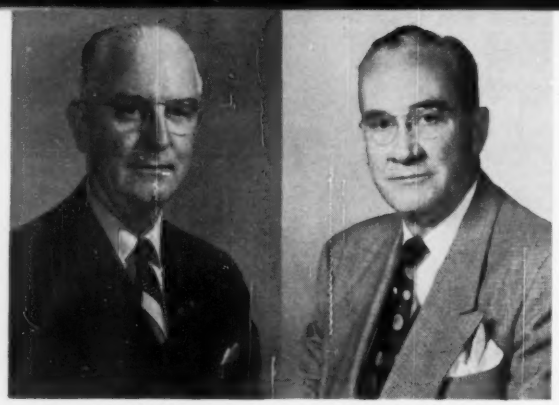


J. F. Molloy H. R. Wing

H. R. Wing Retires

Harold R. Wing, a director, vice president and general sales manager for Crompton & Knowles Corp., retired December 20 after a 39-year association with the firm. He was succeeded as general sales manager by Joseph F. Molloy, former assistant general sales manager in charge of foreign sales.

Wing, who is moving to his new home in Jupiter, Fla., joined Crompton & Knowles in 1917, in the sales department of the Loom Works. After joining the general manager's staff he introduced a new cost system and established, in 1920, a new warehousing system. In 1925 he was made supply sales manager, and in 1944 he was elected a director of the Loom Works.

Wing became vice president in 1953, and was appointed general sales manager, secretary of the executive committee and a member of the development board. He also was a vice president and a director of Crompton & Knowles of Canada Limited, the Canadian subsidiary.

Fourth IRC Nylon Article Postponed

In its three previous issues, MODERN TEXTILES MAGAZINE published the first three articles of a study on nylon and rayon blend carpets, entitled, "How IRC Nylon Behaves in Carpets." The information in those articles included cost and appearance evaluations of the carpets and the results of laboratory and floor tests for crush, recovery and matting. The carpets which comprise this study include 100% IRC nylon, 100% rayon and five nylon/rayon blends—all commercially manufactured into the same construction.

It had been expected that the final results of floor wear tests would be presented in this issue. However, the carpets with the higher content of New IRC Nylon Staple have not worn out sufficiently, even under accelerated conditions, to complete the report at this time. It is anticipated that such data, appearing in the fourth article of this series, will be ready for publication in the near future.

Carpet Outlook Brighter

The carpet industry is enjoying a resurgence and now can be considered a growth industry, according to Joseph L. Eastwick, president of James Lees and Sons Co. He told a sales conference of his company at Atlantic City recently that prospects for the first half of 1957 are excellent.

He added that a price increase will be necessary, due to rising raw material and manufacturing costs. To meet expanding demands for his firm's products, Mr. Eastwick said Lees would spend about $4,000,000 in capital outlays for 1956 and is committed for another $9,000,000 in 1957.

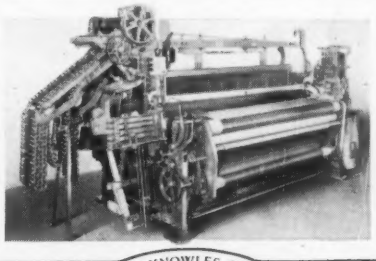
yes, it pays to *dress*

... and not like a mess!

When you see a person walk off with the prizes . . . in *any* walk of life . . . that person is almost always well-dressed, in clothes that are well-woven, cut and tailored. For *good* clothes are badges of self-respect that command respect in others.

Today, the street scene is brighter than ever . . . with new and different fancy fabrics that show more imagination in design than ever before. And the looms that *take the handcuffs off designers* are C&K's new Multi-Purpose line, convertible overnight from plain to fancy fabrics and back again . . . C&K's W3 and W3A Woolen and Worsted Looms with the exclusive Select-A-Pic that puts many non-automatic pick-and-pick fabrics into the profitable field of *automatic* weaving . . . and C&K Jacquards which add almost unlimited magic to many types of fabrics.

Retail slogan of the year is: "Dress right — you can't afford not to."
Slogan of the year for every weaving mill should be: "Protect your profits with C&K Fancy Automatic Box Looms — *you can't afford not to.*"



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C. W. Bendigo

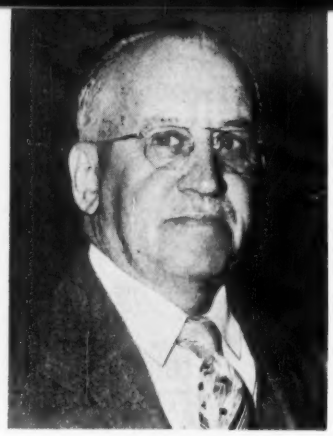
N. H. Marsh

Wm. L. Lyall, Jr.

Creslan Staff Appointments

American Cyanamid Co. recently announced a number of key appointments in its newly formed fibers division. The company plans soon to begin commercial production of Creslan, its acrylic fiber. A. R. Loosli has been named general manager of the fibers division. He was formerly assistant general manager of the fine chemicals division and the industrial chemicals division. C. W. Bendigo has been appointed technical director of the fibers division. He had headed the fiber market development activities of the company since 1951.

Dr. N. H. Marsh has been appointed manager of the company's fiber plant soon to be constructed in Santa Rosa County, Florida. Previously he had been manager of Cyanamid's synthetic fibers research section at Stamford, Conn. William L. Lyall, Jr., has been appointed sales manager of the fiber division. He was formerly executive vice president of Bates Fabrics, Inc.



G. O. Linberg

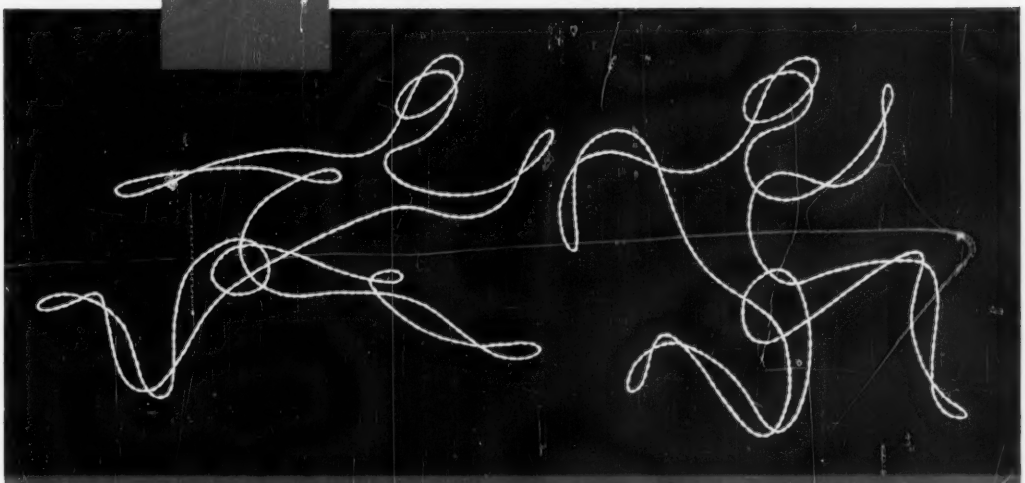
Linberg AATCC President

George O. Linberg, vice president and New England sales manager of Synthron, Inc., assumed office as president of the American Association of Textile Chemists and Colorists on January 1. He succeeds Raymond W. Jacoby, consultant with Ciba, Inc., who served as AATCC head in 1955 and 1956.

Elected as the four regional vice presidents were: for the Middle Atlantic Region: Weldon G. Helmus, vice president and general manager of Fair Lawn Finishing Co., succeeding Frederick V. Traut of Globe Dye Works; New England Region: Ernest R. Kaswell, president and associate director of Fabric Research Laboratories, the incumbent; Southern Region: H. Gillespie Smith, southeastern manager of Dyestuffs Department, American Cyanamid Co., succeeding Dr. Walter M. Scott; Western Region: Elliott Morrill, plant manager and technical director of the Indianapolis Plant and Rit Products Division, The Best Foods, Inc., succeeding Joseph H. Jones of Phoenix Dye Works.

32 million yard dash!

Q. How do you break speed records without breaking yarn?



A. Use IRC Continuous Process Rayon—unblemished by human hands!

Coming in on the beam are 32 million yards* of IRC Continuous Process rayon that could easily fly right through your loom without stopping for a break.

The reason: unequalled uniformity, particularly in the twist. Big cause of broken filaments, slack twist, is practically unheard of in IRC Continuous Process rayon. And knots are few and yarn-miles between. In fact, mile after mile, it's perfect inch by inch.

It's 100% impossible for anyone's hands to damage this rayon while it's spun—they never touch it!

You'd think from the low cost that it was just *any* rayon—but this is the same yarn weavers of the most critical fabrics insist on! Give your looms a break instead of a breakdown—specify Continuous Process rayon.

*A typical beam of 150 denier yarn has 700 strands, each approximately 46,000 yards long. It adds up to over 32 million yards.

I·R·C

INDUSTRIAL RAYON CORPORATION
CLEVELAND, OHIO

Producers of Continuous Process Rayon Yarns, Iron® Cord for Tires and The New Nylon Staple Fiber. Sales Offices: 500 Fifth Avenue, New York 36, N. Y.

450 feet

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per minute

This report on Ideal High Speed Ball Bearing Drawing* was made by one of America's finest independent testing laboratories.

For speed . . . and for high quality drawing sliver . . . write for full information today.

CARD SLIVER

24.5% (2.6)
(average of 24 cans)

BREAKER DRAWING

120 FT. /MIN.	240 Ft. /MIN.	360 FT. /MIN.	450 FT. /MIN.
17.1% (1.7) (average of 8 cans)	17.2% (1.1) (average of 8 cans)	18.4% (2.5) (average of 8 cans)	21.8% (1.5) (average of 8 cans)

FINISHER DRAWING

120 FT. /MIN.	240 FT. /MIN.	360 FT. /MIN.	450 FT. /MIN.
15.0% (1.9) (average of 12 cans)	16.8% (1.6) (average of 12 cans)	16.2% (1.0) (average of 12 cans)	17.7% (0.6) (average of 12 cans)

ROVING

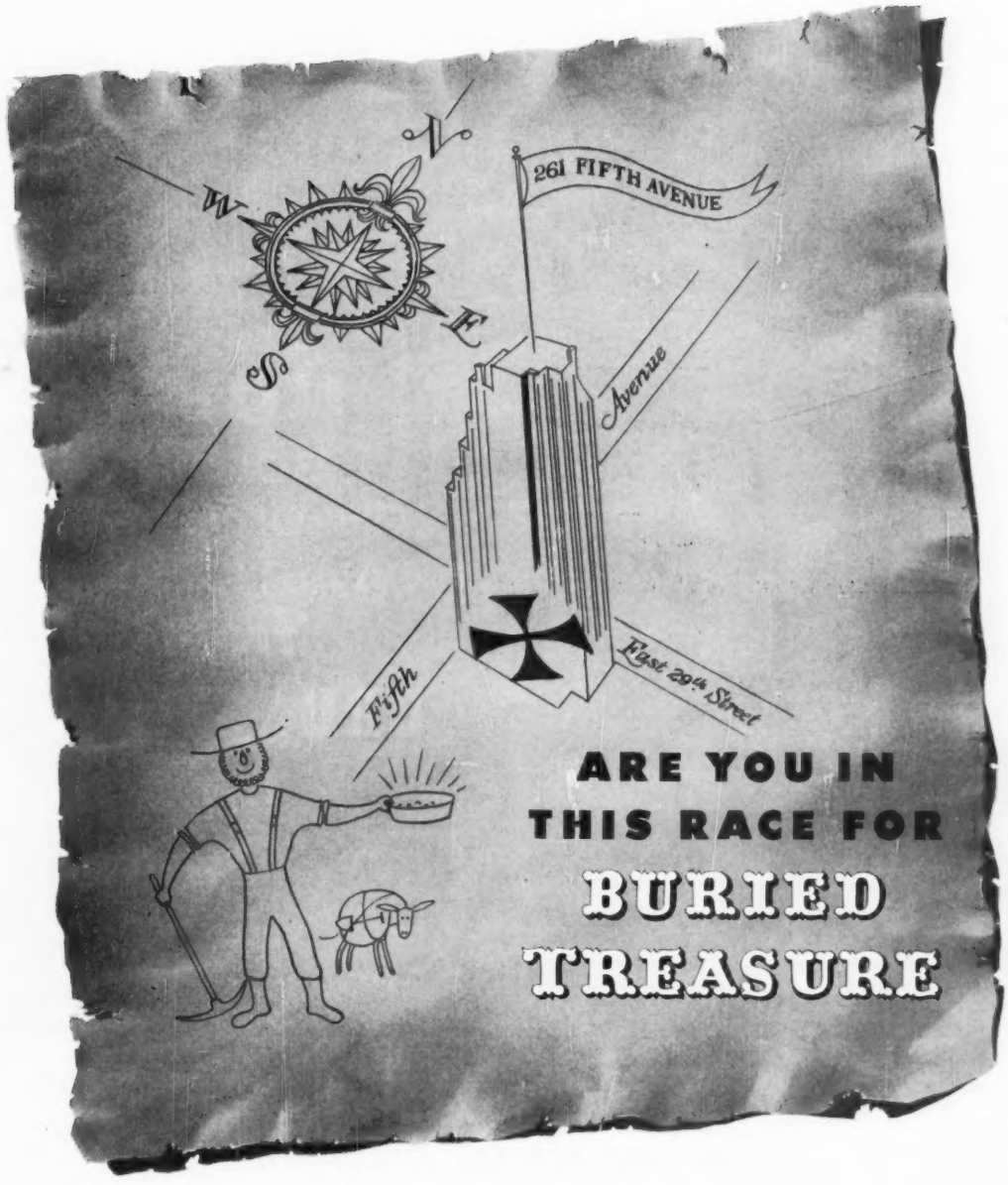
39.1% (1.3) (average of 12 bobbins)	41.2% (1.8) (average of 12 bobbins)	42.0% (2.9) (average of 12 bobbins)	45.6% (2.2) (average of 12 bobbins)

YARN

30.4/1 (0.8) 103% (2.7) 69.0 lbs. (3.5) BF = 2098 (average of 12 bobbins)	30.5/1 (0.7) 104% (2.0) 66.0 lbs. (2.8) BF = 2013 (average of 12 bobbins)	30.3/1 (0.6) 107% (3.1) 68.0 lbs. (2.6) BF = 2060 (average of 12 bobbins)	30.3/1 (0.8) 107% (2.6) 66.0 lbs. (3.7) BF = 2000 (average of 12 bobbins)

*Patent Nos. 2,610,363; 2,490,544; 2,412,357. Other patents pending.

Ideal Industries, Inc.
Bessemer City, N. C.



Perhaps you've travelled to Paris and Rome seeking that cataclysmic fabric idea.

Maybe you travelled too far!

Right here... under your feet... is "buried treasure" by the bucketful. FLAIKONA*... the only continuous filament flake yarn ever perfected... is ready for exploitation by a talented fabric creator!

FLAIKONA offers you plenty to work on. A brand new two-color effect with a single dyeing process! A wonderful new dimension in texture... an irresistible shantung-type weave! Amazing practical qualities... serviceability and weights for everything from men's and women's wear to draperies and upholstery!

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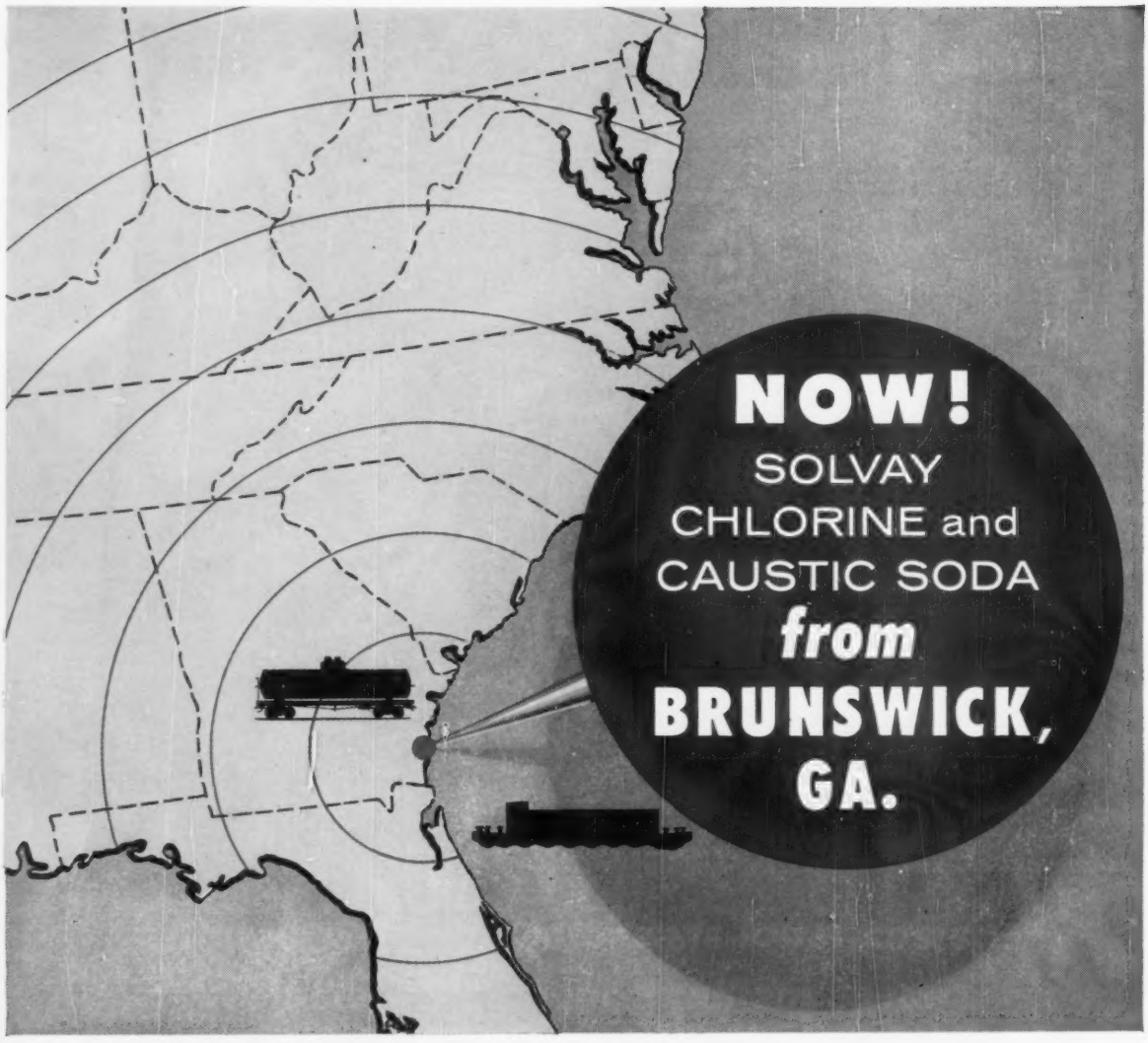

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The addition of Brunswick, Ga. as the newest of SOLVAY's strategically located production centers results in quicker deliveries and lower freight rates for Southeastern chlorine and caustic soda users. Liquid caustic soda will be shipped in tank cars and barges, liquid chlorine in single-unit tank cars. Your nearest SOLVAY branch office will give you information on deliveries from this new SOLVAY source.

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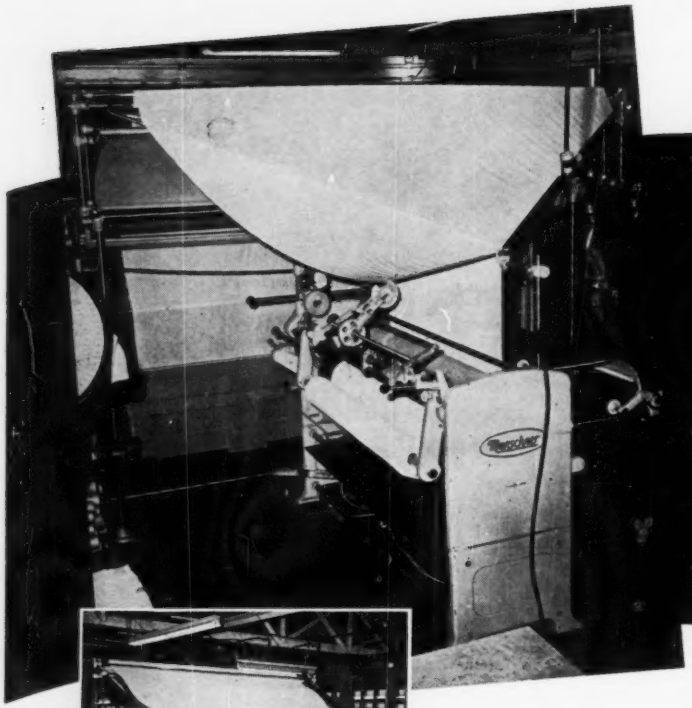
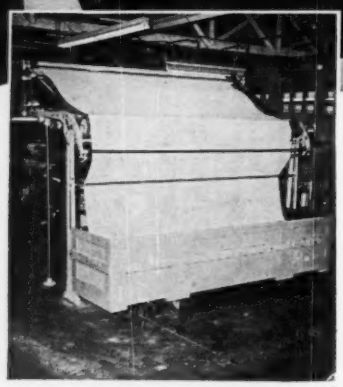


New

HIGH-SPEED,

Doubling, Measuring and Rolling Machine



ALSO AVAILABLE is an attachment (Automatic Guider for Self Doubling, Model S.D. IV) which aligns selvages automatically.

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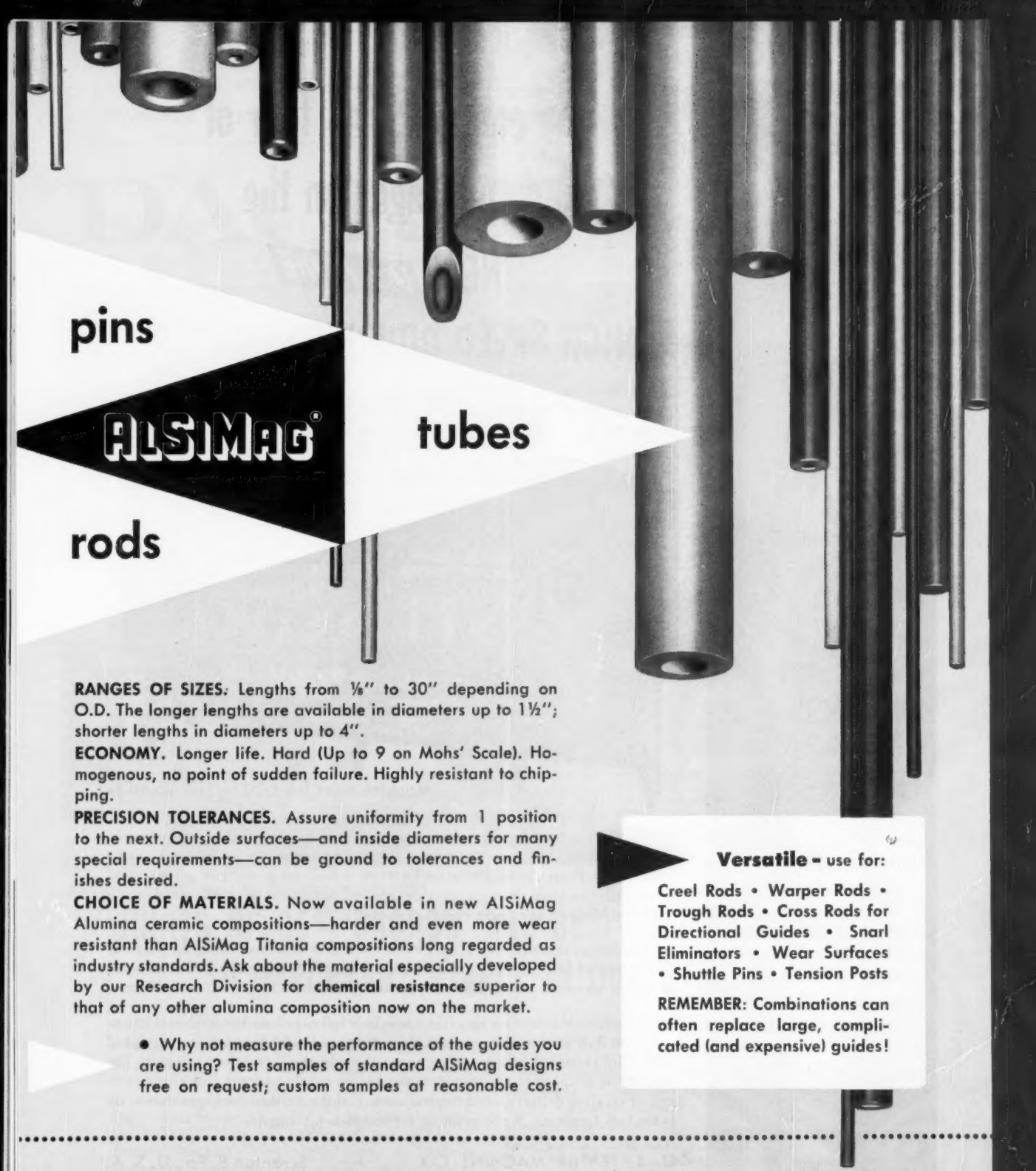
FOUNDED IN 1903 — 550-564 GREGORY AVENUE, WEEHAWKEN, NEW JERSEY



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RANGES OF SIZES. Lengths from ⅛" to 30" depending on O.D. The longer lengths are available in diameters up to 1½"; shorter lengths in diameters up to 4".

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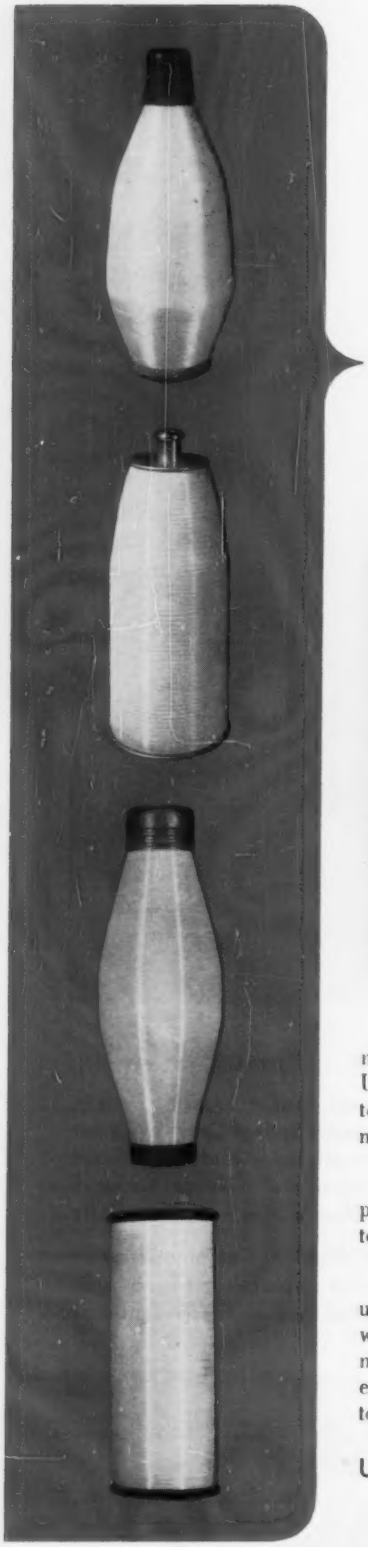
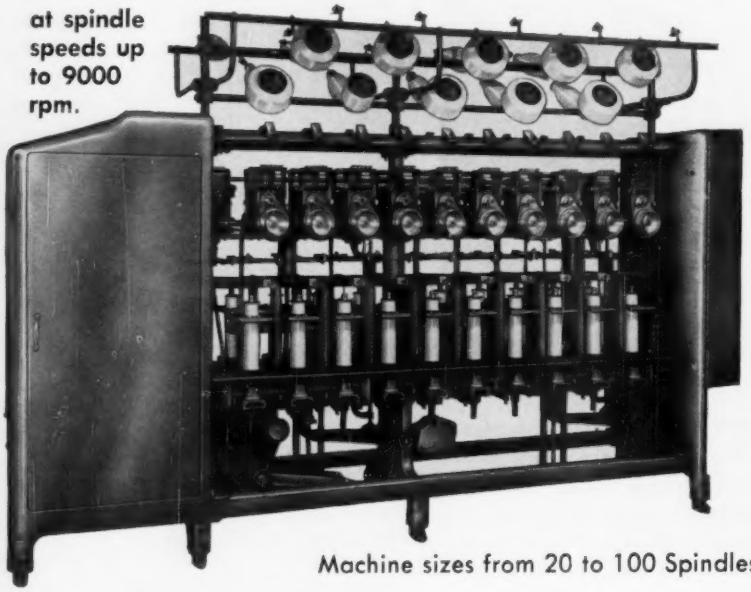


you can make all four of these packages on the

NEW U.S.ACME HIGH SPEED DOUBLER-TWISTER

at spindle speeds up to 9000 rpm.



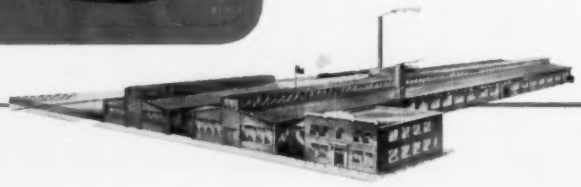
Machine sizes from 20 to 100 Spindles

Yes, you get real package versatility with this newest U. S. ACME—one machine that will produce the several package variations shown here! The new U. S. ACME HIGH SPEED DOUBLER-TWISTER is built on a new unit arrangement to simplify package changes, provide greater stability, higher efficiency, minimum maintenance and lower operating costs.

Speed-wise, this new DOUBLER-TWISTER will give you three times the previous production of any primary twist on zero yarns! It's designed and engineered to handle yarns as low as half-turn-per-inch at spindle speeds up to 9000 in.

The machine features a simplified new feed roll clutch device combined in one unit with dual stop motion controls, drop wires and thread guides. It is equipped with a lint-protected transfer oiling system directly above each feed roll unit. The machine is designed to accommodate any known supply package (for either over-end or rotating delivery) and to produce any of the finished packages shown, up to ten-inch traverse. Write or phone for complete information . . .

U. S. TEXTILE MACHINE CO. • Scranton 8, Pa., U. S. A.



U. S. TEXTILE

designers and manufacturers of
U. S. ACME MODERN THROWING EQUIPMENT

Another Du Pont fiber success story

DACRON at Filene's

REG. U. S. PAT. OFF.

Merchandising Manager A. W. Fish and Buyer Sam Maletz inspect a shirt of "Dacron" and cotton in one of the many styles and colors that are featured at Filene's.

SAYS MR. A. W. FISH OF BOSTON'S FILENE'S:

"SHIRTS OF 65% 'DACRON' AND 35% COTTON ARE NOW AN IMPORTANT STAPLE IN OUR STOCK!"

DACRON and cotton—one of the most strongly preferred fabrics—still hasn't hit its peak, says Merchandising Manager . . .

"These shirts are no longer an emergency item or novelty. They're here to stay," says Filene's Merchandising Manager A. W. Fish. " 'Dacron' is a fiber men know by name," continues Mr. Fish. "They ask for 'Dacron' on the basis of excellent performance. 'Dacron' has steadily climbed to an important place in the men's shirt field."

"To trade customers up," says Mr. Sam Maletz, men's wear buyer for Filene's, "we stress the finer tailoring qualities of this shirt, as well as the self-care feature. Repeat sales are easy, because the customer has had the experience of testing the *performance* of these shirts."

Speaking of performance, Mr. Maletz said that the easy-care, little-or-no-ironing feature of shirts tailored of 65% "Dacron"* polyester fiber and 35% cotton has great appeal. Customers not only like the convenience of wash and wear . . . but the *economy*, as well.

"We've been bullish on shirts of 'Dacron' and cotton from the start," concluded Mr. Maletz. "And we believe there's a place for at least a couple of these shirts in every man's wardrobe."

***P.S.** **DACRON is our registered trademark. When you use it:**

Distinguish it—Capitalize *and* use quotes or italics, or otherwise distinguish by color, lettering, art work, etc.

Describe it—Use the phrase "'Dacron' polyester fiber" at least once in any text.

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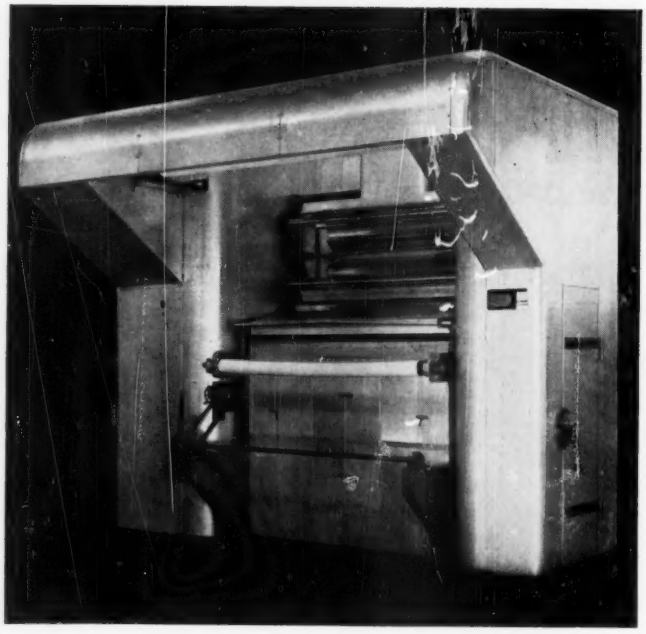

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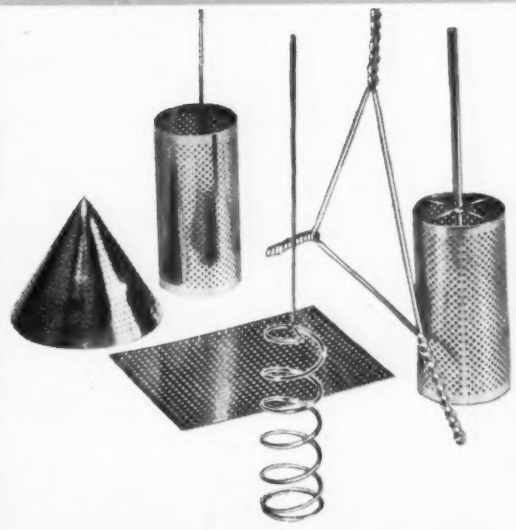

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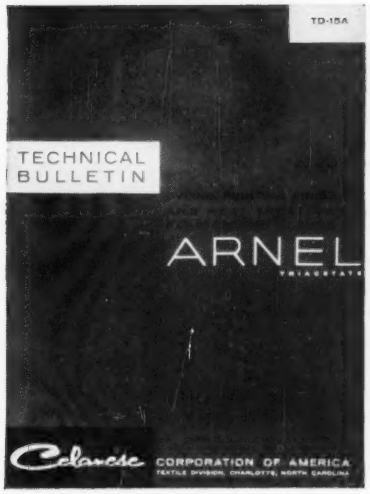

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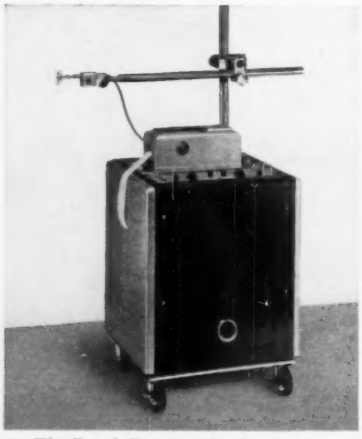

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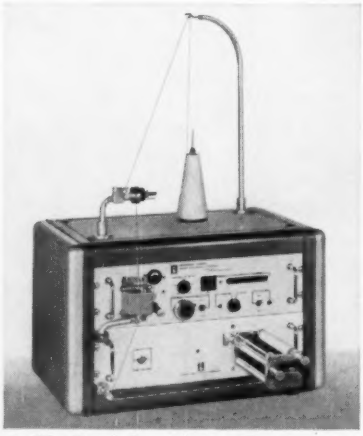

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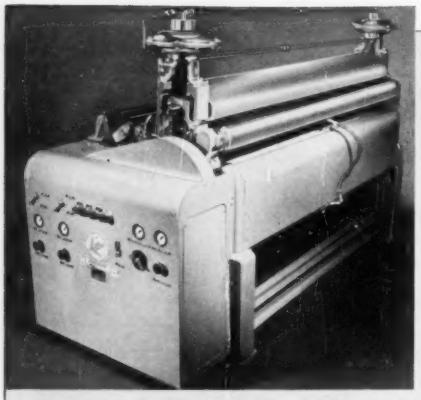
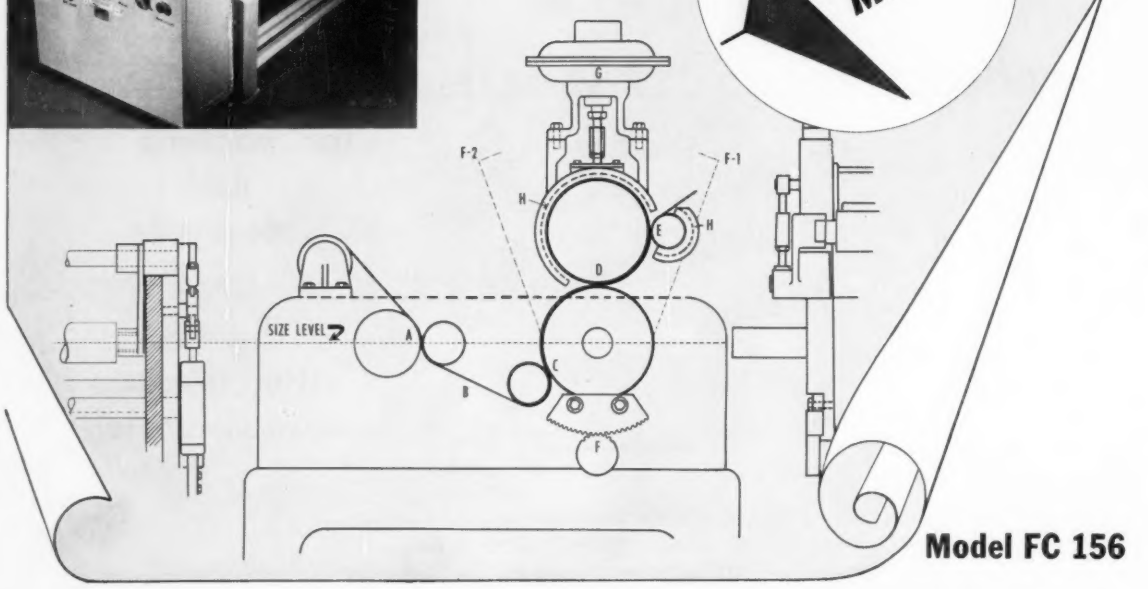


The SIZE MASTER*



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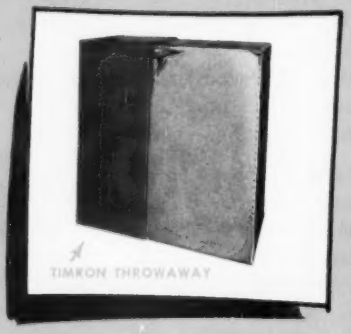

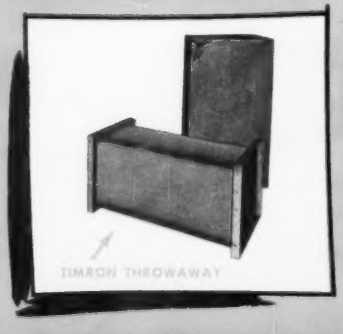

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MODERN
TEXTILES MAGAZINE

January, 1957
Volume 38 Number 1

Publisher's Viewpoint

Collaboration Yes, Merger No

The appearance last month of the annual report of Miss Irene Blunt, executive director of the National Federation of Textiles, serves to call attention to the many-sided and valuable work done by this trade association of weavers and knitters in the area of man-made fibers. Every person in the man-made fibers producing and processing industries will gain helpful information from a careful reading of this extremely well-written document.

In view of the amazing variety of useful functions performed by the staff of the Federation, it comes as a shock to thoughtful persons in positions of leadership in the manufacture of man-made fibers to learn that again there is talk of merging, or rather "submerging", the National Federation of Textiles in the American Cotton Manufacturers Institute.

Those who favor such a merger overlook the important services performed by the NFT—services which it is doubtful would be performed by the ACMI. And they must consider the fact that, in many areas, the man-made fibers segment of textiles has interests distinct from cotton. In the event of a merger of the Federation with ACMI, there is grave danger that these distinctive interests would be neglected.

Anyone familiar with the 85 years of useful activity of NFT will readily recognize that its work has been that which no other organization could have performed. What has this work been? Space does not allow even a brief summary of the day-to-day activities on behalf of the man-made fiber fabrics industry carried on by the National Federation of Textiles. For an adequate idea of what this work is and how important it is, the reader is recommended again to Miss Blunt's admirable Report.

To state the case for the continuation of NFT as an independent trade association is not to deny that there is room for close-knitted joint action by NFT with other trade organizations in defense of their common interests. Leaders in our industry who wish to preserve NFT as it is *do* recognize that there is need for an organization that can speak for the whole industry in Washington. That is why NFT has been active in forming the National Council of Textile Industries along with the National Association of Wool Manufacturers.

NFT leaders indeed believe that much more can be done to provide effective representation of the whole textile manufacturing industry in Washington. In this field the closest collaboration with ACMI and the NAWM is certainly to be welcomed and furthered. Man-made fiber fabric manufacturers need the help of a strong, ably staffed, adequately financed agency in Washington to defend their interests in the vital areas of national legislation and governmental policy.

Such representation can best be achieved in collaboration with the cotton textile industry and other important segments of textiles. But it would be a major mistake for the weavers and knitters of man-made fibers if such collaboration should lead to extinction of their historic and useful trade association, the National Federation of Textiles.

A. H. McCullough

PUBLISHER

OUTLOOK IN TEXTILE MARKETING

By ROBERT C. SHOOK, Textile Economist

Although 1957 textile outlook is good, emphasis will be on newer styles and novelty constructions

Here are some of the important tendencies which we believe will show up in textile and apparel manufacturing and distribution in the year ahead.

1. At the consumer level, there should be a further gain in total dollar sales in 1957. With a higher average sales check, and somewhat higher average prices, the gain in unit volume will be moderate. The importance of styling and good quality should become further evident during the course of the new year.

2. The textile cycle, which is in an upward phase at the moment, may show only moderate gains. This may be disappointing for a time but nevertheless has these advantages:

Excess capacity has been reduced by liquidation of textile machinery and increase in population. Although the industry is still subject to cyclical fluctuations, it will be somewhat more difficult for it to produce excesses of invisible inventory to the same extent as in some past cycles.

The present conservative policy of retailers, and their interest in increased turnover bears witness to increased importance of highly styled merchandise and novelties. For those who can produce them, this should be a stimulus to total business. However, an increase in the importance of styling also places a premium on short-term operations and accurate market analysis.

To extent to which new orders late in 1956 were somewhat disappointing, the possibility of excessive inventories in 1957 is correspondingly reduced. Even if general business tapers off in the latter part of next year, textiles and apparel should remain in a relatively strong position.

3. At the basic levels of the industry, it seems likely that 1957 will bring:

Further gains for Dacron in blends with cotton.

A broadening of distribution for acrylic fibers in woven fabrics, as contrasted with knit fabrics.

Further exploration of the possibilities of high bulk yarn in woven as well as knit fabrics.

More active promotion of modified filament yarns in many end uses.

Many specialized developments involving all the man-made fibers as well as bonded fabric processing, which will bear fruit in later years.

Consumers Smarter than Converters?—When the retailer gets out of step with consumer buying tendencies, he gets into trouble. His sales decline, his inventories back up, his profits vanish. The same thing happens to textile mills and distributors if they misjudge needs of consumer market. And in some significant respects, that is just what they have been doing.

One mistake made by textile processors has been too much poor quality. The consumer has been trading up. Sales have been particularly favorable for items in which good styling and good quality is present.

However, good quality in textile items is hard to recognize. There are certain standards in cotton fabrics, which are fairly well-known to many consumers. For example, the thread count in sheets has some meaning for many customers. The name "Sanforized" is also recognized as denoting washability.

In most cases, however, the consumer, and even the retail buyer, has no way of recognizing intrinsic quality. They must depend either on the reputation of the store, or the resource or on the brand name.

(Continued on page 48)

Vice president and research director, A. W. Zelomek Associates, Inc., 350 Fifth Ave., New York City.

Filter Cloths

A growing use for man-made fibers

By Allan J. Gluckstern
INDUSTRIAL PRODUCTS DIVISION
STEHLI & CO., INC.

FILTER cloths are a major specialty in the industrial fabrics field: a specialty that requires great skill in development and which accounts for about 10 million pounds of various fibers annually. Until the introduction of man-made fabrics, industry depended on natural fibers for filter cloths. It has been only in the past decade that synthetics have wedged a foot in the door. Prior to this, filter cloths had given what was considered reasonable service in some instances. However, in many operations, the filter cloth problem has been a factor of major concern and difficulty.

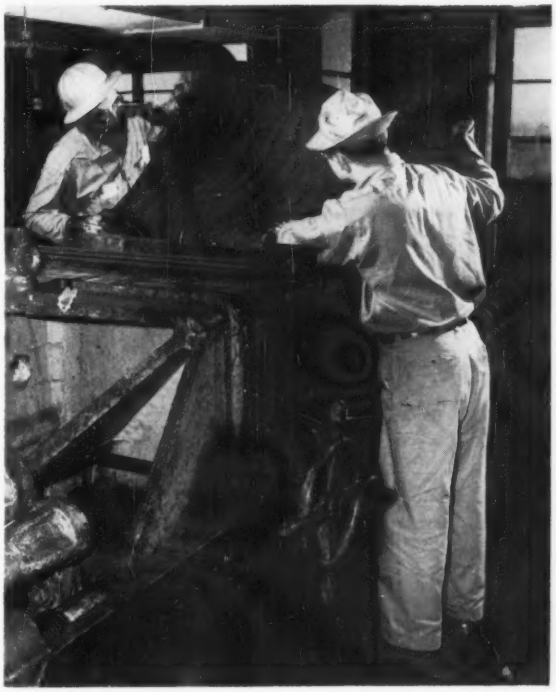
Certain objectionable properties of existing cloths such as progressive blinding, loss of mechanical strength due to chemical or bacterial action, failure due to abrasion and fatigue of fibers, had reduced effective cloth life. Operations had to be carried on in face of lowered cloth efficiency, solely for lack of better types of filter cloth.

It has been demonstrated that through the exceptional properties of some man-made fibers, the greater part of the factors contributing to lowered filter cloth efficiency can be materially reduced and for the most part, entirely eliminated. But cloth is cloth; man and nature have conspired to make it perform just so well and no better. Some filter cloths last hours, some days, some weeks or even months under the variety of beatings an industrial filtering process gives them.

As the seasoned technician faces the facts of filtration, he is well aware of the factor of uncertainty. Despite many theories and formulas which have been advanced on the subject, the nature of filtration makes it difficult to put theory into practice in actual production. This is true because it is almost impossible to duplicate filtration operations exactly on a commercial scale. Therefore, much of the engineer's knowledge of filtration must be gained by trial and error.

The three governing variables in filtration are the filter medium, the filter cake, and the degree of pressure. Before selecting a medium, consideration should be given to the cake and pressure factors. A thin cake results in a faster rate of flow than a thick, dense cake made up of small, closely packed particles. Higher pressure has the effect of increasing the rate of flow. But excess pressure can sometimes result in collapse of the filter cake and resultant failure of the operation. Where washing operations are necessary, the cake may become weakened and uneven, and precautions must be taken against undue dilution of the filtrate.

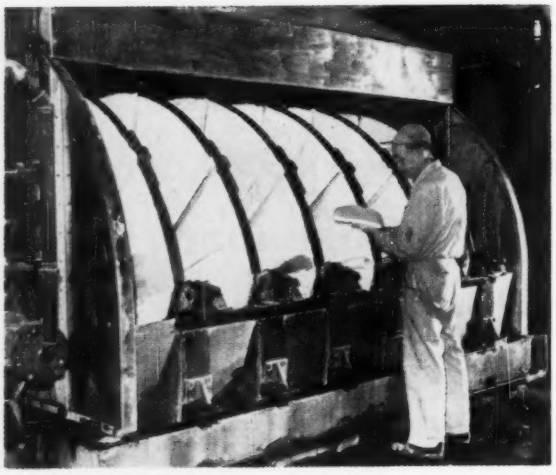
Because of the variety of industries that depend on filter cloths, filter fabrics must frequently be "hand-tailored" for the individual user. The essential element of filtration is the selection of the proper filter medium in each individual case. In turn, the filter medium is directly dependent upon several other factors. Foremost of these are the general nature and specific objectives of the process.



HEAVY DUTY FILTERS—In this big filter press, filter cloths of Orlon acrylic fiber are giving good service.

The objective of liquid filtration is generally either clarification of a liquid or recovery of a valuable solid from a fluid. Not infrequently both objectives are combined. Wet filtration utilizes various equipment such as filter presses, rotary drum vacuum filters, vacuum and pressure type disc filters, and gravity filters.

As a first requirement for wet filtration, the filter medium must be inert in the liquid to be filtered. It is thus insoluble therein, and undergoing little physical change such as shrinkage and distortion. The medium is usually selected so as to permit the maximum passage of liquid consistent with positive retention of the solids to the degree necessary for the particular requirements. Media for vacuum and pressure



NYLON LASTS LONGER—How man-made fibers can do a better job in some filtration uses is illustrated in this battery of cornstarch filters. Natural fiber cloth filters used to clog with starch in three days' use. Nylon cloth lasts 30 to 40 days because starch does not stick so easily to smoother nylon.

filtration must be sufficiently strong to stand up without distortion under the pressure differential.

It is obvious there is no universal fiber for filtration. All fibers have certain weak points which must be recognized in the selection of a filter fabric. Some of the essential qualifications required of the filter fabric are: adequate porosity to permit satisfactory flow; sufficient strength to resist operating pressures, mechanical wear, and such severe action as harsh scraping. The filter fabric must also have resistance to blinding, heat, corrosive chemicals. Last but not least, the surface texture of the filter fabric should be conducive to easy filter cake discharge.

The degree to which the filter cloth possesses these properties and its cost are the determining factors for selection of the filter cloth. When the life of the cloth can somehow be extended without endangering the quality of the product, it amounts to a financial gain that is felt all the way to the sales department.

At the very inception of fabric design, a key decision must be made in the selection of a fiber or combination of fibers. The synthetics have an advantage over the natural fibers since they are available in continuous filament form. The smooth non-fuzzy fabric surface facilitates better cake removal. However, filament fibers may not be as efficient as spun fabrics where maximum clarification of the filtrate is desired.

Filament and Spun Combinations

Combination filament and spun fabrics present another advantage over natural fibers by providing intermediate degrees of filtrate clarification or ease of filter cake removal. With a very low solid content, it is difficult to avoid blinding filament fabrics because no appreciable quantity of cake is formed. Rapid plugging rendering the filtering surface almost impermeable is often prevented by using layers of precoating materials possessing high porosity such as diatomaceous earth.

As a final step in the selection of a filter medium for wet filtration it is important to determine the degree of *finishing* essential for the most satisfactory filter performance. Although many liquid filtration fabrics are used in the gray cloth form, there are some instances where the fit of the fabric to the equipment demands low tolerance particularly when handling hot slurries.

Where synthetic fabrics are concerned, dimensionable stability tends to become a definite responsibility of the fabric producer. Heat-setting contributes to more even balance of warp and filling yarn tension, provides better surface smoothness, reduces yarn slippage, controls porosity and permits hot water washings essential in certain filtration operations.

Attention should be given to the operating temperature in any given filtration process with due regard to the stabilization temperature applied in the original heat-setting of the fabric. Dimensionable stability may be lost if this heat-setting temperature is greatly exceeded. Subsequent hydraulic calendering will effectively decrease the permeability of any given cloth as well as impart a surface smoothness unequaled by any other type of finishing process.

Another type of filtration of major importance to be considered is dry filtration or dust collection. Wherever organic or inorganic materials, such as ores, minerals, metals, pigments, chemicals, wood, coal, or grain, are handled, transported, crushed, ground, separated, abraded, shattered, packed, etc., dust particles of varying size are produced. In many industries this dust itself is a by-product with definite commercial value.

In dry filtration as practiced in industrial dust collection systems, the governing theory may be reduced to a very simple formula: Remove the dust-laden air at the point of origin; convey it to the dust collector; provide a positive means of separating the dust from the air.

What Technician Must Remember

The technician, in designing fabrics for this use, must take into consideration the following essential factors affecting performance: Low back-pressure when dust-laden; low blinding degree; and low dust loss.

The porosity of the clean cloth is important in securing low blinding and high particle recovery. The cloth must have low resistance to air flow so that oversize fans or excessive fan speeds can be avoided. It must not be so tightly woven that it blocks up easily, or so loosely woven that solid material passes through it and is lost. Properly designed fabrics may possibly have a yield as high as 99.9%. This is the chief advantage of cloth dust collectors over such equipment as cyclones, electrical precipitators and sonic collectors.

In dry filtration it is possible to minimize high back-pressure by lightly napping the side that will receive the dust-laden air or gas. The raised fibers on the surface promote the formation of a previous filter cake which does not penetrate and blind the interstices of the fabric. The filter cake becomes the filter medium with the fabric serving only as a support.

In certain situations where there is a tendency for moisture condensation to collect on the filtering surface of the dust cloth, retention of dust-laden particles on the napped surface will result in formation of a mud or paste, thereby making the recovery of the dust extremely difficult. Under these circumstances, it has been found most advantageous to use a smooth continuous filament fabric which will facilitate the removal of the dust. ■

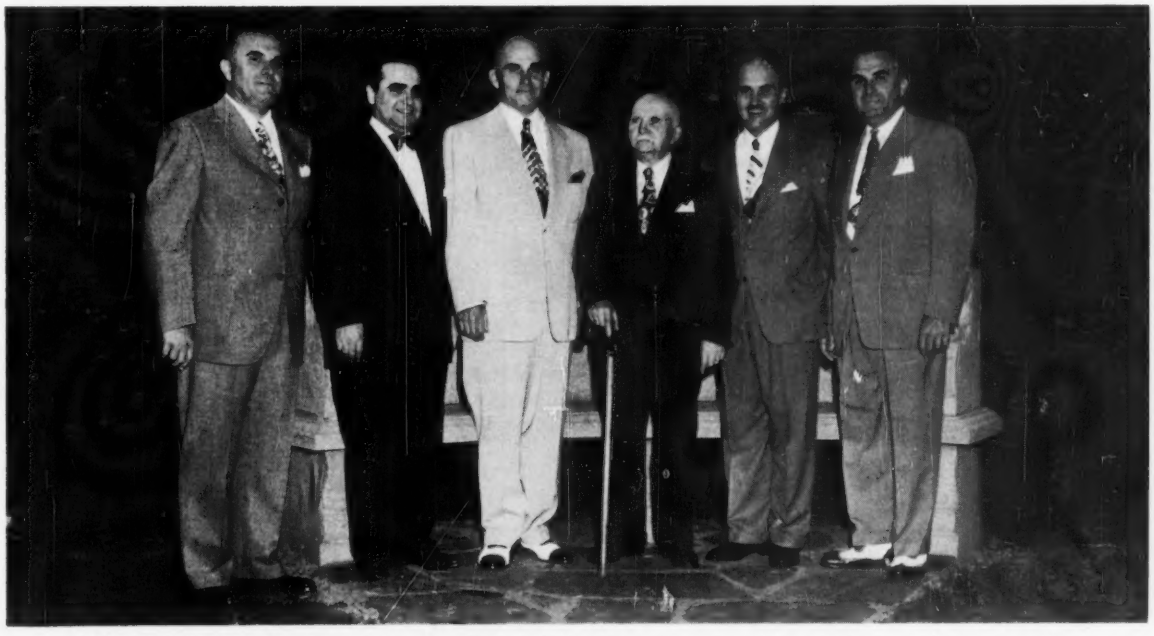
In 1919, Frank Ix and his sons set up a small weaving business. Today that business has grown to four mills with more than 2,000 looms and a solid reputation for integrity

The wonderful story of SIX IX'S

By Jerome Campbell
EDITOR, MODERN TEXTILES MAGAZINE

IN THE OFFICE of Edward P. Ix, president of Frank Ix & Sons, there hangs framed in glass a scrap of newspaper torn from a New York daily of 1934. The scrap of paper is an advertisement for "The House of Rothschild", a successful movie in its day starring the famous George Arliss. In the advertisement, Arliss as the founder of the immensely successful international banking house, is shown on his deathbed. To his five sons assembled about him he utters his final words: "Always stand together. Never let one brother succeed while another fails."

When Frank Ix, a man who also had five sons in business with him, read this advertisement, it struck him forcibly as expressing his own feelings. He tore it from the page and wrote across it: "To my five sons." His sons understood, when the bit of newsprint was passed from one to the other of them, what their father had in mind. Knowing their father, they understood why the advertisement seemed so expressive to him of their own family-and-business relationship. Their understanding of their father's feelings led Ed Ix to save the bit of highly perishable paper, protecting it for 22 years from deterioration behind its glass frame. With the Ix brothers themselves getting gray around the temples as middle age approaches the youngest of them, the advertisement for the Rothschild movie has become to them a meaningful symbol of the principle of cohesiveness which has made their family business successful. It is something to be handed down to their own sons, some of whom are active in the family textile business.



FAMILY BUSINESS—This picture, taken at a family gathering not many years ago shows Frank Ix and his five sons—the six Ix's who built Frank Ix and Sons. Left to right, they are: Frank, Jr., Edward, Alex, Frank Sr., Charles and William Ix.

Frank Ix, Sr.

The founder of Frank Ix and Sons died in 1955 at the age of 88. In his memory and in memory of their mother, the Ix brothers have set up the Frank and Catherine Ix Foundation for the purpose of helping children of employees and others finance their educations, and for other charitable purposes.

When Frank Ix tore the Rothschild advertisement from the newspaper, the business he had started with his three older sons Alex, Bill and Frank, was already well along on its path to its present status as one of the country's leading weavers of synthetic yarns. The company had been organized in 1919 when the three young men came home from their wartime service. The decision that Frank Ix made to set up his sons in the weaving business was a momentous one for the Ix family. Frank Ix, Sr., at that time was 52—an age when few men are willing to undertake new and chancy ventures. He had behind him a lifetime of experience in textiles and a solid reputation as an authority on weaving pile fabrics.

A Family of Hand Weavers

Frank Ix was born in Germany in 1867, in a little weaving community near Krefeld in the Rhineland. He was descended from a long line of skilled handweavers, and was the youngest of six sons. His father and five older brothers operated five or six hand looms in their home, specializing in weaving velvets. From the time he was able to walk, Frank Ix was learning by doing the skills needed to produce fine pile fabrics. Before he had enough strength to operate the big hand looms, he cut quills for his weaving brothers and wound them with silk yarns.

By the time he was 20, Frank Ix was a skilled hand weaver. He was alert enough to realize, however, that hand weaving had no future in the face of the growing use of power looms. He decided to learn more about these new machines that could turn out fabric so much faster. He found work in a mill in Krefeld and quickly mastered the intricacies of power looms used there.

Krefeld then as now was a center of the progressive German textile industry. German-made looms were in demand throughout the world for their efficiency in the production of pile fabrics. In 1892, Frank Ix, then only 25 years old, was offered a chance to go to the United States to set up a shipment of looms bought by the New York firm of Sidney Blumenthal & Co. The offer was immensely gratifying to young Ix. It was proof that his employers thought highly of his skills as a weaver and loom fixer; and it was a wonderful opportunity for a young fellow to see something of the world.

Frank Ix crossed the ocean to New York, and what he found here he liked. The Blumenthal management liked him, too. He remained in their service for 35 years, rising in time to be weaving superintendent of the big Shelton, Conn. mill the company built in 1900 when it had outgrown its New York City establishment.

His Wife Had Textile Background, Too

It is characteristic of Frank Ix's lifelong identification with textiles, that having been born into a family steeped for generations in the manufacture of fine cloth, he married into another family also closely related to textile manufacture. His bride, Catherine le Bert de Bar, of mixed German and French ancestry, was a member of the De Bar family long connected with silk manufacture. An uncle of Catherine's was a member of the famous silk firm of Valentine, Bunker & De Bar, and several other relatives in the United States and Europe were profitably engaged in textile manufacture.

Frank and Catherine Ix had five sons. Alex their first-born was followed by William and Frank who are twins. Charles was next and after him, Edward, the youngest. As these boys grew up in the little town of Shelton, Conn., two things were remarkable about their otherwise ordinarily happy and uneventful childhood. The first of these remarkable things was the atmosphere of affectionate cohesiveness, the warm feeling of solidarity and ability to get along together.

Trained to Get Along Together

Their mother trained these boys to live together in harmony and friendliness—a harmony that has persisted with them over the long decades of their maturity. It is this solidarity of action that has enabled them to build one of the most successful fabric manufacturing businesses in the United States. It was not that the Ix boys did not have their differences, and their occasional quarrels. They did have these difficulties from time to time as any lively household with five boys could be expected to have. Catherine and Frank Ix did not try to force their high-spirited boys into rigid molds of perfect behavior. But Catherine and Frank Ix did make a policy of vigorously discouraging brotherly antagonisms from persisting beyond any one day.

"Mother used to say," Ed Ix now recalls, "I don't care how you boys quarrel and disagree during the day, but I don't want you to carry any of these disagreements over into the next day." She insisted that we patch up our quarrels before going to bed and she made sure that we awoke the next day with yesterday's hard feelings left behind.

The other remarkable aspect of the boyhood of the five Ix brothers was their early and constant exposure to textile manufacturing. The Blumenthal mill in Shelton where their father was superintendent of weaving was a second home to them.

(Continued on Page 68)

250,000 decisions... only 4 mistakes!

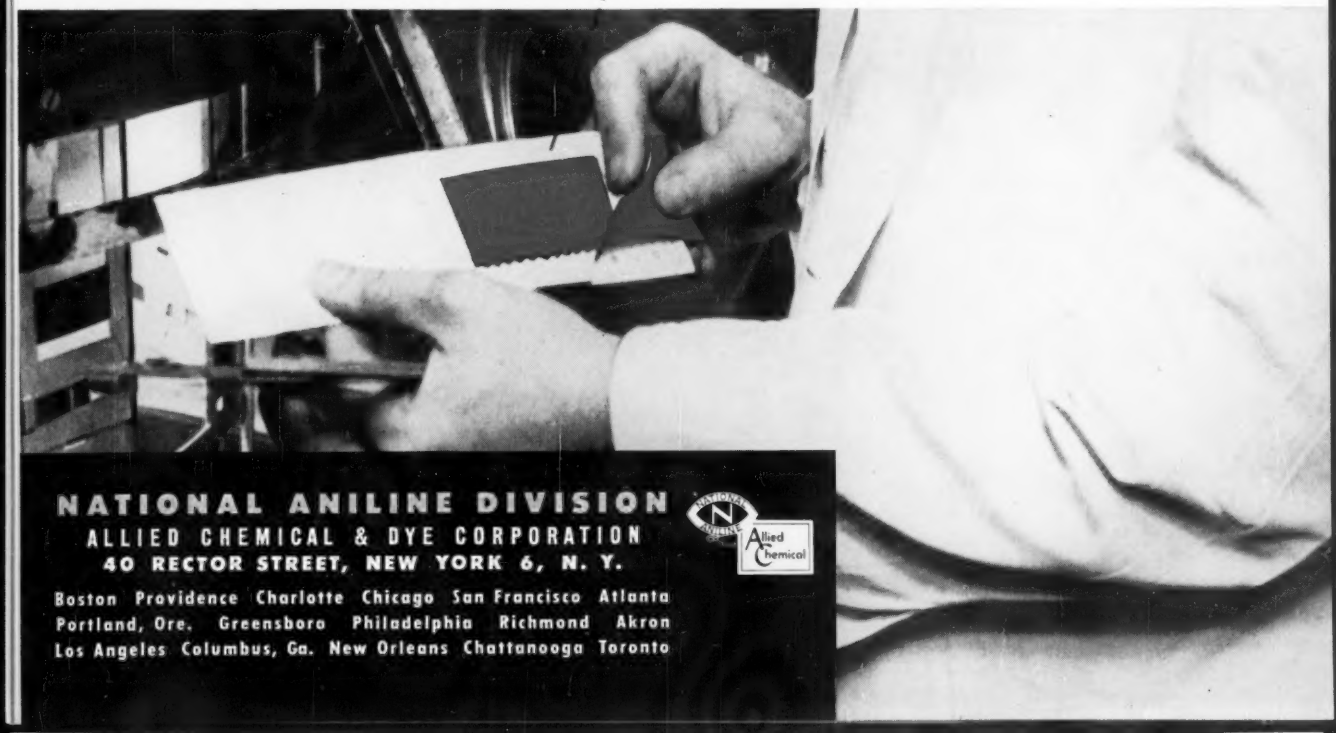
Infallibility is non-existent here below, but National Aniline approaches it in its shade cards!

We have published over a quarter million color ratings. To date *only four have been successfully challenged!* Of these, two were errors of over-conservatism in which we rated colors lower than they deserved.

This remarkable record is clear proof of the absolute objectivity with which National presents its products... a source of pride in the integrity as well as the skill and experience of our technical personnel.

National shade cards and bulletins give you reliable standards by which to judge colors in advance. Our Color Standardization Laboratory assures you that every shipment will be up to specifications. Colors will perform as anticipated, without specking, lack of shade-uniformity or other difficulties due to variations in strength and purity.

You are entitled to this high standard of integrity, quality and service. You get it when you do business with National!



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MILL TEST PROCEDURES

a new series on quality control

By Norbert L. Enrick*

Tests for Better Yarn Production

Seventh of a Series

CONTINUING the presentation of general tests for the yarn mill's quality control program, the following additional procedures are provided here:

— Control of Package Sizes, Roving through Yarn
— Production and Quality Speeds of Machinery
— Moisture in Textile Materials
— Mill Humidification
— Evenness Testing of Sliver, Roving and Yarn

While the purpose, methods of sampling and testing, and evaluation of results are covered in each procedure, a number of supplementary considerations involving frequency of testing, testing forms, and reference tables, are discussed below.

Package Size Tests

In general, the following frequencies should be found suitable for scheduling this type of test:

Type of Frames	*Frequency*
Roving	Every 5 weeks
Spinning, Winding, Spooling & Twisting	Every 10 weeks

The number of packages per frame to be checked for dimensional and weight conformance is shown in Table III. A convenient recording form, which serves both as a worksheet during testing and as a reference record, is illustrated in the example in Figure 18.

* Institute of Textile Technology. Formerly with Werner Textile Consultants.

PACKAGE SIZE SAMPLING AND TESTING DATA

		ROVING	SPINNING AND TWISTING	WINDING AND SPOOLING
Weighing Tests	Weight	50 Bobbins of 2.0 H.R. or finer. 30 Bobbins of coarser than 2.0 H.R.	200 Spinning Bobbins 100 4-inch Ring Twister Bobbins 50 Bobbins on over 4-inch Ring Twisters 30 Bobbins on less than 4-inch Ring Twisters	50 Packages
Dimensional Tests	Sample	2 Bobbins per Frame, One from each Row	2 Bobbins per Frame Side	4 Packages per Yarn Number
	Measure	Maximum Lift Maximum Diameter Coils per inch of full roving bobbin	Maximum Lift on Warp Winds Maximum Diameter and Lift on Filling Winds Minimum Lift on Combination Winds Package Shape on Frames with Bottom Former	Diameter on Spools and Cheeses Diameter of Base and Height of Cones Other Dimensions as Specified

Measurements: Measurements should be made accurate to the nearest 1/16 inch.

Sampling: Sampling should be random, and at such unexpected intervals as will not permit prior knowledge by any operator whose work is to be checked.

Weighing: Weighing should be done only rarely on Roving and Spinning, except where dimensional tests show off-standard results.

Table III

ROVING PACKAGE SIZE

Frame Data			Traverse Length		Full Diameter	Coils/ Inch	Net Weight, Oz.
No.	Make	Bobbin Length	Start	Finish			

Fig. 18

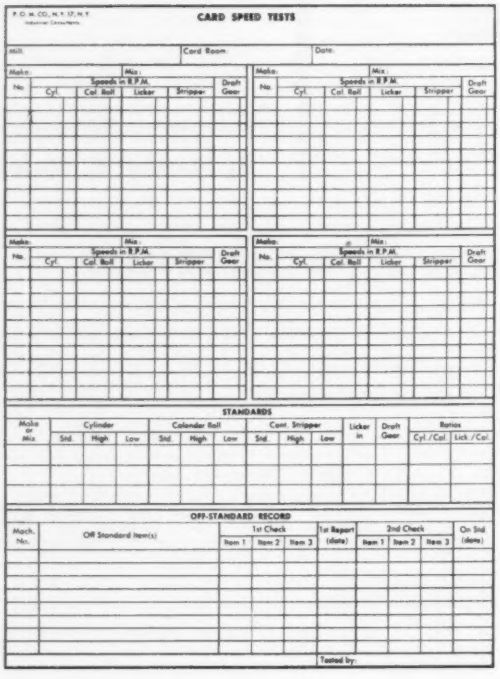
Speed Tests

The desirable frequency schedules for testing, as well as the particular rolls, shafts, and cylinders generally tested in each processing stage, have been furnished in connection with each set of departmental test procedures. A general test procedure is furnished here, providing the essentials and purpose of the method. An illustrative recording form, for use in streamlining the testing of machine speeds, is provided in Figure 19.

Moisture and Humidity Control

Since the weighing of textiles under ordinary room conditions includes a certain amount of moisture, the mill should be equipped to periodically determine the actual amount of moisture present. This will serve to show the true weight of materials, either on the basis of a completely dry state, or at some established standard moisture condition. This becomes of importance in checking raw materials received, as well as in controlling the amount of moisture present in yarn or cloth to be shipped.

Unfortunately, no general rules can be furnished for frequency of testing, since much depends on the type of raw materials purchased, the system used for mill humidification, whether or not mill and laboratory are air-conditioned, and prevailing trade requirements. Based on these factors, individual frequency schedules must be developed for each mill. The amount of moisture present in textile materials



CARD SPEED TESTS

Mill: Card Room: Date:

Make: Mix: — Speeds in R.P.M. — No. | Cyl. | Cal. Roll | Licker | Stripper | Draft Gear

STANDARDS

Make or Mix | Cylinder (Std. / High / Low) | Calender Roll (Std. / High / Low) | Cont. Stripper (Std. / High / Low) | Licker in | Draft Gear | Ratios (Cyl./Cal. / Lick./Cal.)

OFF-STANDARD RECORD

Mach. No. | Off Standard Item(s) | 1st Check (Item 1 / Item 2 / Item 3) | 1st Report (date) | 2nd Check (Item 1 / Item 2 / Item 3) | On Std. (date)

Tested by:

Fig. 19

may be stated in two related expressions, "moisture content" and "moisture regain." These two terms are related to each other as shown in the convenient comparison and conversion figures, presented in Table IV, and developed from the formula shown in the test procedure.

of evenness or un-evenness, it is only in recent years that this has become practical for everyday mill use and quality control. Work which used to require many tedious and painstaking hours, can now be accomplished in a matter of minutes by use of modern automatic evenness testers, which electronically or mechanically sense the thickness of strand passing through the measuring head. These instruments, such as the Brush, Uster and Pacific testers, are also equipped with automatic recording devices for graphically showing the variation observed, and for showing on a dial the general unevenness found, such as percent average range, percent average variation, or percent coefficient of variation.

Where variations in the particular sliver, roving or yarn tested are excessive, examination of the recorded graph of "heavy" and "light" parts in the material will usually reveal the source of trouble in the machinery. Typical examples are provided in Figure 20. Experienced persons can usually tell the faulty roll involved from a cursory examination of the graph. Others will need to rely on the relatively simple method of analysis indicated under "Evaluation" in the test procedure.

In addition to being able to "trouble-shoot" with evenness testers, it is also desirable to have a single figure which indicates the amount of unevenness or variability in the sliver, roving or yarn. The general principle by which the instrument can provide such a figure, using electro-mechanical or electronic circuitry, is shown in Figure 21. The resultant value obtained is the average percent variation.*

* The author is Chairman of the Evenness Testing Committee, American Society for Testing Materials (D-13, B-8), now engaged in the development of standards for this type of testing on the various commercially available instruments for evenness testing. Copies of the present tentative standard may be obtained by writing to the author. The ASTM standard is designed as a referee-method, and not as a method of quality control testing within a mill.

Content	Regain	Content	Regain	Content	Regain	Content	Regain	Content	Regain
.0%	.000%	5.0%	5.263%	10.0%	11.111%	15.0%	17.647%	20.0%	25.000%
.2%	.200%	5.2%	5.485%	10.2%	11.358%	15.2%	17.924%	20.2%	25.313%
.4%	.401%	5.4%	5.708%	10.4%	11.607%	15.4%	18.203%	20.4%	25.628%
.6%	.603%	5.6%	5.932%	10.6%	11.856%	15.6%	18.483%	20.6%	25.945%
.8%	.806%	5.8%	6.157%	10.8%	12.107%	15.8%	18.764%	20.8%	26.262%
1.0%	1.010%	6.0%	6.382%	11.0%	12.359%	16.0%	19.047%	21.0%	26.582%
1.2%	1.214%	6.2%	6.609%	11.2%	12.612%	16.2%	19.331%	21.2%	26.903%
1.4%	1.419%	6.4%	6.838%	11.4%	12.866%	16.4%	19.617%	21.4%	27.226%
1.6%	1.626%	6.6%	7.066%	11.6%	13.122%	16.6%	19.904%	21.6%	27.551%
1.8%	1.832%	6.8%	7.296%	11.8%	13.378%	16.8%	20.192%	21.8%	27.877%
2.0%	2.040%	7.0%	7.525%	12.0%	13.636%	17.0%	20.481%	22.0%	28.205%
2.2%	2.250%	7.2%	7.758%	12.2%	13.895%	17.2%	20.772%	22.2%	28.534%
2.4%	2.459%	7.4%	7.991%	12.4%	14.155%	17.4%	21.065%	22.4%	28.865%
2.6%	2.669%	7.6%	8.225%	12.6%	14.416%	17.6%	21.359%	22.6%	29.198%
2.8%	2.880%	7.8%	8.459%	12.8%	14.678%	17.8%	21.654%	22.8%	29.533%
3.0%	3.092%	8.0%	8.695%	13.0%	14.942%	18.0%	21.951%	23.0%	29.870%
3.2%	3.305%	8.2%	8.932%	13.2%	15.207%	18.2%	22.249%	23.2%	30.208%
3.4%	3.519%	8.4%	9.170%	13.4%	15.473%	18.4%	22.547%	23.4%	30.548%
3.6%	3.734%	8.6%	9.409%	13.6%	15.740%	18.6%	22.850%	23.6%	30.890%
3.8%	3.950%	8.8%	9.649%	13.8%	16.009%	18.8%	23.152%	23.8%	31.233%
4.0%	4.166%	9.0%	9.890%	14.0%	16.279%	19.0%	23.456%	24.0%	31.578%
4.2%	4.384%	9.2%	10.132%	14.2%	16.551%	19.2%	23.762%	24.2%	31.926%
4.4%	4.602%	9.4%	10.375%	14.4%	16.822%	19.4%	24.069%	24.4%	32.275%
4.6%	4.821%	9.6%	10.619%	14.6%	17.096%	19.6%	24.378%	24.6%	32.625%
4.8%	5.042%	9.8%	10.864%	14.8%	17.370%	19.8%	24.688%	24.8%	32.978%

Table IV

Since not only the moisture content of the final yarn, but also the running conditions of stock during processing depend to a large extent on proper humidity control throughout the mill, a weekly check of all humidification stations throughout the mill is desirable. A test procedure for this purpose is therefore provided in this instalment.

Evenness Testing

While it has always been possible in the research laboratory to cut and weigh short successive lengths of textile strands, and thereby evaluate their degree

PACKAGE SIZE TESTS IN ROVING, SPINNING AND YARN PREPARATION

Purpose

Unless full package sizes are maintained throughout processing, the operators' workload will increase, since more frequent creeling and doffing then becomes necessary. In addition, there will be more piecings, thus lowering yarn and cloth quality.

Package size checks indicate whether or not proper dimensions and weights of packages are maintained. In addition, they show whether the builder motions

Nylon for Carpeting.....!

WHY?

HERE'S WHY:

1. **Permanent Textures.** More *permanent* than wool, cotton or rayon.
2. **Cleanable.** Nylon is an easy-to-care-for fiber. The round, smooth nylon fibers prevent dirt from clinging. May be spot-cleaned and shampooed. Dries quickly.
3. **Resists Abrasion and Scuffing.** Will outwear comparable carpeting made from *any other* fiber
4. **Resists Crushing and Matting.** More crush resistance and less matting than comparable wool, rayon or cotton floor coverings in service.
5. **More Resilient.** More resilient than comparable wool, rayon or cotton floor coverings after continued usage.
6. **Economical.** The strongest and toughest of all carpet fibers, nylon will outwear comparable wool and rayon fabrics, thus be actually less expensive in the long run.
7. **Mothproof, Insect-Resistant.** Never a worry about moths! Carpet beetles cannot attack nylon carpeting.
8. **Decorator Colors.** Nylon can be dyed in lasting colors and an attractive range of shades.

Any reliable manufacturer can deliver these benefits in carpeting made from 100% IRC nylon. In addition, manufacturers can, and are delivering nylon blends in superior carpeting which features many of the pluses listed above.

Nylon offers the carpeting industry positive performance characteristics that add up to true value for the consumer.

THE NEW Nylon Staple I·R·C

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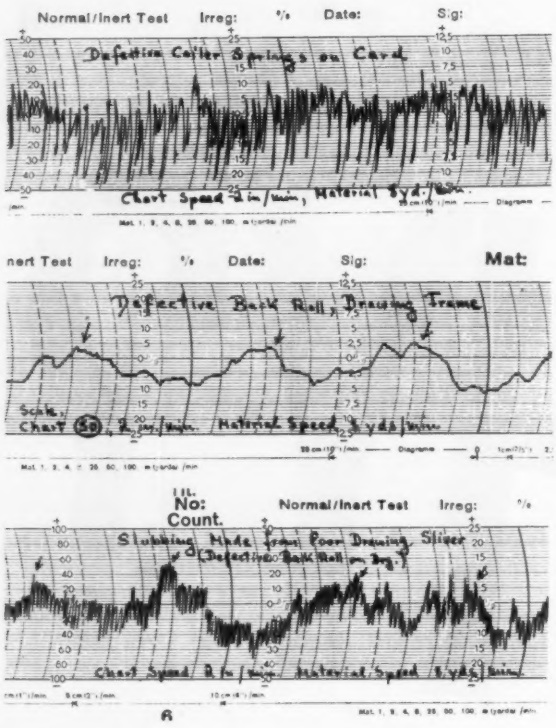

Fig. 20—Patterns on Evenness Charts reveal sources of excessive Variation, as illustrated in the examples above.

of equipment are functioning properly, an important aid in maintaining quality and running conditions. For example, an improperly built yarn package might cause excessive stops in knitting.

Equipment

12-inch scale, slide calipers, straight edge, platform scale.

Sampling

See Table of Package Size Test Data following.

Procedure

1. Dimensional checks: test the points indicated on the Table of Package Size Test Data.
2. Weighing checks:
   a. Obtain the gross weight of the bobbins weighed, as provided by the Table of Package Size Test Data.
   b. Deduct the tare weight of the container and empty bobbins. (Use past averages for empty bobbins.)
   c. Gross weight minus tare weight gives net weight.

Evaluation

In cases where there have been complaints about "short" packages, check both dimensions and weights. If dimensions are on standard but weights are light, the frame is probably building a package which is too soft. A tighter wind would put more yardage on the package.

In general, dimensions depending upon length of doffing cycle indicate how closely this has been maintained by the operator; while dimensions controlled by machine settings furnish information on the mechanical condition of the frame.

SPEED TESTS

Purpose

To assure conformance to standards for production and quality.

Equipment

For speeds below 50 RPM, a revolution counter and stop watch are used. For higher speeds, the following applies:

Range of RPM's	*Use Speed Indicator With:*	*Read to Nearest:*
1,000-10,000	1000-RPM Sweep of Needle	5 RPM
100- 1,000	100-RPM Sweep of Needle	1 RPM
50- 100	100-RPM Sweep of Needle	½ RPM

Procedure

1. Clean end of shaft with waste and dust it with piece of chalk, so as to reduce slippage of indicator or counter spindle.
2. Cover spindle with properly suited rubber tip and apply to rotating shaft. The indicator will automatically stop and show RPM. The counter should be applied for exactly one stop-watch minute to show RPM from the difference in revolution count at start and finish of one minute.
3. On speeds between 10 and 25 RPM, apply counter for 2 minutes, and divide the total revolutions by 2 to find RPM.
4. On speeds of less than 10 RPM, permit the shaft to rotate ten times and divide this 10 by the elapsed minutes, read on the stop-watch to the nearest 0.01. This will again yield RPM.

Caution

Use only fluffy waste, balled up, to clean shaft ends. Rags or thread may wrap around fingers or wrists,

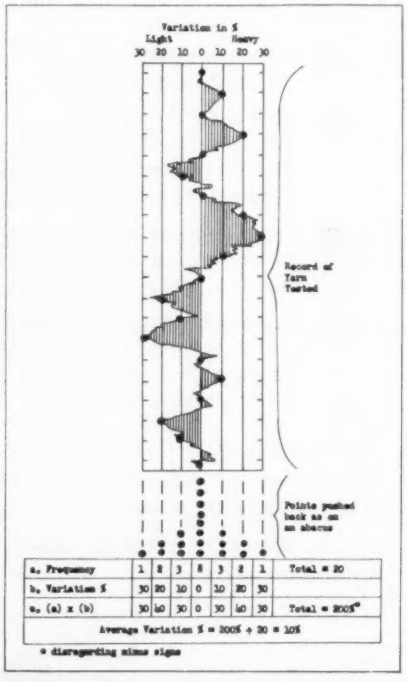

Fig. 21—Principle of finding Average Variation Percent. In this simplified illustration, only 20 points are used along the Evenness Chart. Actually, the electronic equipment utilizes a theoretically infinite number of points along the recorded graph in computing the Average Variation Percent.

the hidden pluses of nylon for carpeting

You are selling positive performance characteristics when you sell nylon carpeting. It's sound merchandising for you, and true value for your customer, when you offer the performance pluses that make nylon today's best buy in carpeting.

HERE'S WHY:

+1 **Permanent Textures.** More *permanent* than wool, cotton or rayon.

+2 **Resists Abrasion and Scuffing.** Will out-wear comparable carpeting made from *any other* fiber.

+3 **Resists Crushing and Matting.** More crush resistance and less matting than comparable wool, rayon or cotton floor coverings in service.

+4 **More Resilient.** More resilient than comparable wool, rayon or cotton floor coverings after continued usage.

+5 **Cleanable.** Nylon is an easy-to-care-for fiber. The round, smooth nylon fibers prevent dirt from clinging. May be spot-cleaned and shampooed. Dries quickly.

+6 **Economical.** The strongest and toughest of all carpet fibers, nylon will out-wear comparable wool and rayon fabrics, thus be actually less expensive in the long run.

+7 **Mothproof, Insect-Resistant.** Never a worry about moths! Carpet beetles cannot attack nylon carpeting.

+8 **Decorator Colors.** Nylon can be dyed in lasting colors and an attractive range of shades.

Any reliable manufacturer can deliver these benefits in carpeting made from 100% IRC NEW NYLON fiber. In addition, manufacturers can, and are delivering superior carpeting using respectable percentages of nylon and featuring many of the pluses listed above.

THE NEW Nylon Staple I·R·C

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and could then be momentarily drawn into fast moving parts of the machinery.

Evaluation

Where upon retest a speed is more than 3% off-standard, it will usually indicate slipping belts or improper gear-and-pulley combinations. This in turn causes off-standard tensions, drafts, twists or production rates, depending upon the particular type roll or shaft tested on a given equipment.

By examining the off-standard speed results, the faulty condition can be most readily ascertained, so that corrective action can be taken. Accordingly, only key speeds (which are usually readily accessible for test) need be taken on each type of machinery, in order to obtain the essential speed data for isolating faulty conditions on the frame.

MOISTURE REGAIN DETERMINATION

Purpose

To determine the amount of moisture present in textile materials, from fiber to fabric.

Equipment

Moisture oven. Weighing-in scale, accurate to 0.1 grains.

Sampling

Select specimens as follows: raw stock, 5 to 15 pinches; cloth, 2 swatches per style; sales yarn, 4 lengths per yarn count. Collect in air-tight glass jars, preferably filled to capacity, so as to exclude air and possible moisture condensation on the glass.

Procedure

1. Weigh the specimen on the weighing-in scale.
2. Dry the specimen in the oven, until two successive readings on the built-in oven scale, five minutes apart, yield identical weights.
3. Compute the Moisture Regain (MR) from the original weight (OW) and the dry weight (DW), using the formula:
$$\% \text{ MR} = (\text{OW} - \text{DW}) \times 100/\text{DW}$$
4. Special ovens permit weighing-in specimens of pre-determined weight, thus yielding direct dry weighings in terms of Moisture Content (MC), which can be converted to MR by use of the Table IV shown.

Evaluation

After an actual weight has been observed and the MR has been found, the following formula is used to convert the actual weight to standard at specified MR:

$$\text{Weight at Std. MR} = \frac{100 + \text{Standard MR}}{100 + \text{Actual MR}} \times \text{Actual Weight}$$

This method presumes direct weighings in grains-per-yard, denier, or other *direct* numbering system. Where *indirect* numbering systems are used, such as Yarn Number or Hank Roving, the formula above must be correspondingly inverted:

$$\text{Weight at Std. MR} = \frac{100 + \text{Actual MR}}{100 + \text{Standard MR}} \times \text{Actual Weight}$$

It should be noted that MR and MC are related as shown in Table IV and expressed by the formula:

$$\text{MR} = (100 \times \text{MC})/(100 - \text{MC})$$

In general, the textile industry prefers the use of MR to MC; although, of course, both are related measures, as shown by the formula above.

HUMIDITY CONTROL CHECK

Purpose

Where humidification spray systems are used, periodic checks are required of each spray head and its corresponding control box, so as to assure proper calibration and good working order.

Equipment

Sling spychrometer, with wet-bulb and dry-bulb thermometers. Table for converting thermometer readings to relative humidity (supplied with the instrument). Jar of distilled water.

Procedure

1. Dip wet bulb into jar of distilled water. (Clean jar and distilled water are needed, since even small contamination of the sensitive wet-bulb wick will impair accuracy.) Saturate wick.
2. Standing near the control box, whirl psychrometer for the required seconds (usually 30) at the required circumferential speed (usually 10 to 20 feet per second), as specified by the manufacturer.
3. Quickly obtain a wet-bulb reading to the nearest 0.5°, followed by a dry-bulb reading. Be sure to keep hands, face and breath as far away from bulbs as possible, so as not to affect the reading.
4. Using a conversion chart, convert the readings found into relative humidity.
5. Repeat steps 1 to 4 until two successive readings agree within 1%.

Evaluation

Usually, a spray head may require repair, or its control box may need re-calibration or repair, under one of these two conditions:

1. Actual humidity, found from the psychrometer, is higher than standard. Yet humidity head is spraying.
2. Actual humidity, found from the psychrometer, is lower than standard. Yet humidity head is either not spraying or else spraying weakly.

After an off-standard condition has been found, re-calibration or repair is usually left to specially trained personnel in the Maintenance Department responsible for this work.

EVENNESS TESTING

Purpose

Evenness testing of stock, from sliver through yarn, aids in the quick detection and correction of faulty machine conditions or settings. This leads to production of a uniform and strong yarn, with minimum ends-down and high machine efficiency.

Sampling

Test 10 to 15 yards of sliver, 12 to 25 yards of roving, and 75 to 150 yards of yarn.

Equipment

Automatic evenness tester, equipped with chart recorder and integrator or evaluator.

Procedure

Within the operating instructions pertaining to the various makes and models of testers, proceed as follows:

1. Calibrate the instrument, and re-check this calibration every 4 to 8 hours.
2. Thread the material in and run the test, with the chart recorder "off" but the integrator or evaluator switched "on." *(Continued on page 59)*

FACTS about NEW DEPARTURE BALL BEARINGS

BALL BEARING SPINDLES PRODUCE CLEANER YARN-FASTER!

New Departure self-enclosed spindle bearings are grease-lubricated—operate for as long as five years without relubrication. They eliminate a common cause of oil mist—produce cleaner, better yarn.

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BALL BEARINGS

GM GENERAL MOTORS

NOTHING ROLLS LIKE A BALL

REPORT FROM EUROPE

BY SPECIAL CORRESPONDENT

Suez Crisis Hits Textiles

PARIS—Rayons—cotton—wool—all textile costs in Europe are on way up as direct result of the past two months crisis in Middle East. Impact has been different for each branch of textile industry. But, comparatively, synthetics including truly man-made fibers, may get off better than two principal natural fibers.

The Organization for European Economic Cooperation has been evaluating here effects of crisis—and particularly added cost structure industry is likely to bear as result of closing of Suez Canal and higher fuel costs. OEEC sources say this, in brief:

Wool, Cotton Outlook—Cost of landing wool in United Kingdom, for example, has gone up by 25% as result of longer shipping route around South Africa. This must be considered along with the firm wool market that has already seen merino types rise one-third over year ago and lesser grades by 15 to 25%. European demand for wool fabrics, meanwhile, remains brisk—partly due to cooler homes as result of fuel shortage.

Cotton manufacturers have been less severely hit by cost rises. However, American dock workers strike in November, coming at a time when heavy European shipments were being scheduled, strained many suppliers. Egyptian long-staple types have also risen, and mill men are wondering what future will bring. Heating costs in factories have risen some 30%—this on top of spotty wage rises (6% in U.K. late last year).

But Man-Made Fibers May Benefit—Rayon and synthetic fiber manufacturers have been hit in two ways by the Middle East crisis. First, they, like all manufacturers, are paying greater fuel bills, shipping charges (on wood pulp and cellulose) and internal delivery costs (gasoline prices are at record high). Second, rayons have seen their automotive fabric market eroded when car producers cut back on output to meet lessened demand as gasoline supplies dwindled.

Relatively, however, the rayon cost rise is less than that so far recorded for natural fibers. Also the two natural fibers are low on supply side. This is true even for cotton and has brought a slight price rise. Demand for rayon, it is felt, may boom if cotton cost picture is not soon reversed. And the true man-mades are certain to profit from higher costs of wool.

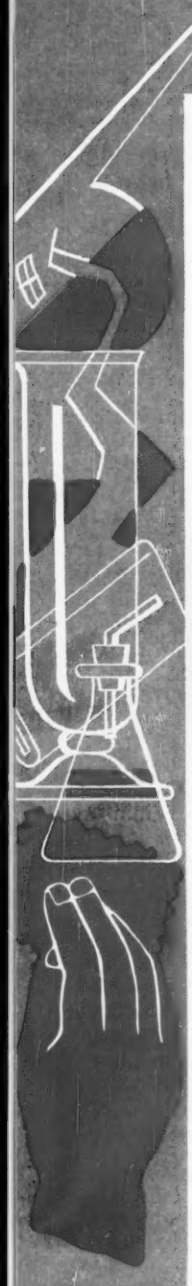
Higher Costs May Reduce Fiber Exports—But there is a "fly in the ointment" for the whole European textile industry—and this is what has been worrying OEEC. During the past few years, OEEC has been concerned mostly with trying to narrow the spread between Europe's generally high cost economic structure and the United States'. Since textile exports to the U. S. are an important source of dollar-earnings, OEEC has been meeting and suggesting ways for Europe to improve its competitive position in order that exports to U. S. may increase.

The rising cost structure of European textile industry, however, is now widening Europe-versus-America cost gap. It will certainly touch exports of woolens and other made-up fabrics and may hit rayon staple—depending upon U. S. demand conditions.

European Man-Mades Boom—As has been true for a number of years, crises may come and go, but the truly man-made fibers (synthetics, as Europeans call them) strengthen their position continuously. According to as yet unofficial 1956 production figures, European output of synthetics jumped nearly 67% over 1955. European synthetic fiber production was estimated last year at 100,000 metric tons, against 60,000 in 1955. U.K. is greatest producer with 36,000 tons (21,000 in 1955), followed by Italy's 20,100 (8,600 in '55); France's 18,900 (12,200); Germany's 16,000 (11,600); Holland's 3,600 (2,200); Switzerland's 2,400 (same in '55), and Belgium's 2,200 (1,200).

(Continued on page 48)

DYEING and FINISHING SECTION



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Fine count yarns of Orlon

Here are Du Pont's carefully worked out directions for spinning the new one denier staple into yarns for light weight fabrics

ONE denier-per-filament Orlon acrylic staple was developed by Du Pont for fine-count yarn fabrics such as broadcloths, voiles, batistes and madras to be used in blouses, lingerie, underwear, sport-shirts and other fine-fabric uses.

The uniformity of 100% Orlon and 85% Orlon/15% cotton (approximate) 60/1 c.c. yarns and their performance in the loom have proven their acceptability. The fabrics display good aesthetics and uniformity of appearance.

The new 1.0 denier Orlon is available in lengths up to 3 inches and in both bright and semi-dull lusters. This report provides information on processing 1½ inch staple to 60/1 c.c. yarns. While the settings are given for specific machines, comparable settings for other types should be satisfactory.

Picking

The following picker settings are given for the Saco-Lowell Model 6 picker.

Beater, RPM	1025
Beater to Fringe Roll, Setting	3/16 in.
Fringe Roll, RPM	7.75
Fringe Roll, Dia.	2⅞ in.
Beats per Inch (2 passes)	57.4
Fan, RPM	1800
Top Draft Gear—Teeth	24
Bottom Draft Gear—Teeth	18
Draft Ratio	4.1
Split Lap Preventer to Calender Roll, Setting	½ in.
Blending Reserve Doffer, RPM	220
Baffle Plate Setting (Blending Reserve)	
Breaker Lap	10 in.
Finisher Lap	14 in.
Cut-off Knife to Beater, Setting	1/16 in.
Air Pressure on Pneumatic Lap Rack	20 PSI
Weight of Lap	12 oz./yd.²
Length of Lap	30 yds.

If lap splitting is encountered, attention should be given to the following:

Increase the fan speed and adjust the baffles to blow the stock to the upper condenser screen, forming a one-layer lap. Because 1.0 denier is more sensitive than the heavier deniers, the air pressure becomes critical and must be uniform from side to side.

The cut-off knife to beater setting should be close—1/16 inch. This helps deflect the stock toward the upper screen and prevents it from remaining in the beater section and becoming overworked.

Split lap preventers are required. The lower preventer may be set to within ⅛ inch or 1/16 inch of the calender rolls. The floating type can be used for the upper split lap preventer and should also be set fairly close to the rolls.

The calender stack load should be increased to about 1800 pounds on each side.

An oscillating comb on the vertical feed apron of the hopper will usually give a uniform feed.

A tandem feed hopper will be of considerable help in obtaining uniform feed and will provide sufficient preliminary opening before picking.

Carding

A fancy roll and, in general, close settings are necessary for satisfactory carding. The following settings have been used on a Whitin Model L, flat card:

Lickerin Speed	330 RPM
Cylinder Speed	170 RPM
Doffer Speed	4.5 RPM
Fancy Roll Speed (1¼" depth or bite)	1550 RPM
Clothing Wire	110-120
Feed Plate to Lickerin	0.012 in.
Lickerin to Cylinder	0.007 in.
Cylinder to Doffer	0.007 in.
Flats to Cylinder	0.007 in.
	0.007 in.
	0.009 in.
	0.009 in.
	0.009 in.
Flat Speed	3 ft./min.
Front Plate—Top	0.022 in.
Bottom	0.034 in.
Back Plate—Top	0.029 in.
Bottom	0.022 in.
Sliver Weight	42 gr./yd.

Springs or pillows in the sliver cans may be necessary to prevent coiler head choking.

Drawing

Sliver made from this staple has been processed satisfactorily on Saco-Lowell 3/4, Whitin 4/4, Ideal 4/4 and Saco-Lowell 4/4 draw frames. Generally, two passes are necessary. The following settings were used on a Whitin 4/4 draw frame for breaker and finisher drawing:

Ends Fed	6
Sliver Weight	42 gr./yd.
Draft	6
Roll Settings 1-2	1⅝ in.
2-3	1¾ in.
3-4	1⅞ in.
Front Roll Dia.	1 3/16 in.
Front Roll Speed	460 RPM (Reduce, if roller lapping occurs)

Combed Egyptian cotton is recommended for blending. To obtain an 85% Orlon/15% cotton (approximate) blend, combine 5 ends of Orlon and 1 end of cotton at breaker drawing. An adjustment of the tension may be necessary if the cotton has a tendency to run slack. Additional aids in correcting this are: (1) increase the break draft between the 3-4 rolls; (2) set the rolls as close to the staple length as possible.

(Continued on Page 79)

An effective new anti-static finish

Aston LT lasts through washing, drycleaning

By Giuliana C. Tesoro
Onyx Oil & Chemical Co.

A new anti-static agent, Aston LT, made by Onyx Oil & Chemical Co. represents an encouraging forward stride in the researcher's quest for a chemical agent which eliminates static electricity from the entire range of commercial synthetic fibers.

Only a few weeks after Modern Textiles Magazine in its October, 1956, issue (*Chemical Anti-Static Agents,* page 48) reported the progress made in this field, Aston LT appeared and its properties, in the opinion of this writer, seem essentially to fulfill the requirements of the "ideal anti-static agent" as defined in the MTM article.

Aston LT is a member of the large and variegated family of organic polymers. Thus modern polymer chemistry, which has given us synthetic fibers, now provides a remedy to one of their serious shortcomings. The new product, when applied, deposits a hygroscopic, thermosetting polyelectrolyte on the surface of the fibers and is cured to an insoluble resin of high ionic concentration. The ions provide sufficient conductance, while hydroscopic groups, built into the molecule, insure Aston LT's effectiveness at extremely low humidity. This new anti-static chemical has the "enormous amount of anti-static properties bound up in each molecule" which the October MTM article specified as being the first and foremost requirement of the "ideal anti-static agent".

It *is* effective in small amounts on all fibers.

It *is* permanent to washing and dry cleaning.

It is not completely free of effect on color and hand, when applied to meet severe durability requirements, but it is so effective that color and hand can be preserved when moderate durability is required. Thus true permanency can be achieved only when color is not critical, while color and effect can be preserved when the fabric is not expected to undergo severe laundering or dry cleaning. Even this limited durability is, for most fibers, greater than that obtained previously.

The amount applied when severe durability requirements (50 to 100 machine launderings) must be met, is of the order of 2% resin on the weight of fabric: this amount gives a full, rather crisp hand, which is very desirable for some fabrics.

When a soft hand is preferred, it can be achieved by aftertreatment with softening agents. A 2% application of the product causes a slight discoloration, which is significant only in the case of white or light-colored fabrics. If the fabric is not expected to undergo severe laundering, a smaller amount of resin (0.5 to 1%) is sufficient to give durable anti-static properties, and discoloration is greatly reduced.

For instance, durability to about 50-70 hand launderings can be obtained without objectionable effects on color. At present, the effect on color is the only limitation on the use of the product, especially where preservation of whiteness and brilliance, coupled with extreme durability, are required. The progress of research shows that this last limitation will soon be overcome.

In principle, a chemical anti-static agent could function by two mechanisms: It could prevent the formation of electrical charges, or it could dissipate them rapidly. Much speculation was devoted to the prevention of the formation of charges, but in practice, no success whatsoever was achieved without rapid dissipation, or conductance. The fact that electrical resistivity (the reciprocal of conductance) and the tendency to accumulate charges showed a complete correlation when different fibers (natural and synthetic) were compared, further suggests the overriding significance of conductance.

If the textile were fully insulated, the significance of conductance would be reduced, but, generally speaking, this is not the case. Likewise, the conductance mechanism might not prove sufficiently effective in some cases of extremely fast charge generation: this situation might exist in some rapid rate processing step, but not in actual consumer's use.

Thus, it was logical to base the anti-static protection of garments on the mechanism of conductance. A simple concept forms the basis for this theory: as long as charges are dissipated fast enough, it does not matter to what extent they are generated.

Disregarding metallic (electronic) conductance, only the transfer of electricity by migrating ions can provide conductance. This transfer takes place rapidly in presence of water, where electrolytic dissociation occurs. Therefore, hygroscopicity appears to be a necessary requirement for a chemical anti-static agent.

Indeed, hygroscopicity alone could provide a certain measure of protection. The low tendency of natural fibers to accumulate electrostatic charges can be attributed to their hygroscopicity. Wool, which is comparatively hygroscopic, shows considerable tendency to static due to the hydrophobic nature of the fiber surface. Apparently, hygroscopicity of the surface is the mechanism by which natural fibers ward off accumulation of electric charges.

Water provides the medium which makes the transfer of electricity possible: it is a necessary, but not a sufficient condition for conductance. In fact, the conductance of pure water ("Kohlrausch water", named after the German physicist who first prepared an electrically pure water) is comparatively low. It is about ten times lower than that of distilled water, and one hundred or one thousand times lower than that of ordinary tap water.

Thus, a hygroscopic layer on the surface of a fiber can provide conductance by relying on the presence of "tramp" ions, which are present due to contamination (in processing, rinsing, handling, absorption from the atmosphere etc.) Obviously, by increasing the concentration of ions, the conductance is increased,

Typical Resistivity Values for fabrics treated with Aston LT

	% Aston LT	R(RH: 27-32%) 0 L	5 L	10 L	20 L
Nylon	2.5	6.1×10^{10}	3.2×10^{10}	1.0×10^{11}	3.0×10^{11}
Dacron	2.0	1.4×10^{10}	1.4×10^{10}	2.4×10^{10}	1.4×10^{11}
Dacron	1.0	1.9×10^{10}	4.2×10^{10}	5.2×10^{11}	2.8×10^{12}
Orlon	2.0	9.0×10^{9}	1.1×10^{10}	1.1×10^{10}	2.2×10^{10}
Orlon	1.0	5.0×10^{10}	3.1×10^{11}	3.6×10^{11}	6.1×10^{11}
Acrilan	1.0	2.1×10^{10}	3.4×10^{10}	3.4×10^{10}	1.0×10^{11}
Arnel	2.2	2.4×10^{10}	2.4×10^{10}	3.6×10^{10}	7.0×10^{10}
Arnel	1.1	2.4×10^{10}	2.4×10^{10}	5.6×10^{10}	1.1×10^{11}
All Untreated fabrics		$>2.4 \times 10^{14}$	---	$>2.4 \times 10^{14}$	---

L = Laundering in a household washing machine at 140°F., 0.125% Tide; 35-40 min. cycle.

and a sufficiently conductant surface will be formed by a hygroscopic layer capable of maintaining a sufficiently high concentration of ions through normal rinsing or washing procedures.

The measuring instruments used for determining the effect of anti-static agents on textiles have often given results which could not be correlated with each other, or with the actual static effects found in practice. In the case of Aston LT, measuring instruments and practical tests have concurred in returning a favorable verdict on its anti-static properties and durability.

The efficiency of the finish makes its use economical. The average application for a 4 ounce fabric will involve a chemical cost of 1.5 cents per yard, or less.

The principles employed in the application of this product are new to the textile industry, and their usefulness in practical terms will develop gradually. Regardless of the problems which may arise, a product which has true anti-static properties, true permanency, and true non-specific effectiveness, provides the first actual solution of a problem which has plagued the synthetic fiber industry since its inception.

Outlook *(Continued from page 30)*

L-22, and other standards which have been proposed, have the virtue of assuring a minimum satisfactory quality, at least so far as the fabric is concerned. Key textile people have therefore been surprised that retail buyers are no more anxious than they have been to buy merchandise bearing such labels. However, it must be recognized that:

The average retail buyer is a creature of custom, at least to some extent, and changes his buying habits only slowly.

Many retail buyers, despite expressed interest of retail trade associations in quality standards, still know little about them.

Stores have had little or no experience with performance and have no idea whether they will reduce complaints and returns, or to what extent.

Consumers know even less about such standards than retailers and their buyers, and are certainly not breaking down the doors to obtain merchandise bearing such labels.

Standards Need Vigorous Promotion—On a realistic basis, therefore, the industry can hardly expect quality-labeled merchandise to have much appeal until a considerable amount of advertising and promotional money have been spent in creating such an appeal. The progress toward meaningful textile-appeal standards will necessarily be slow, and will eventually require a much broader industry backing than such standards and their associated labels now receive.

However, the fact that the problem is somewhat complex, and that a solution is likely to be expensive, in no way diminishes its importance. ■

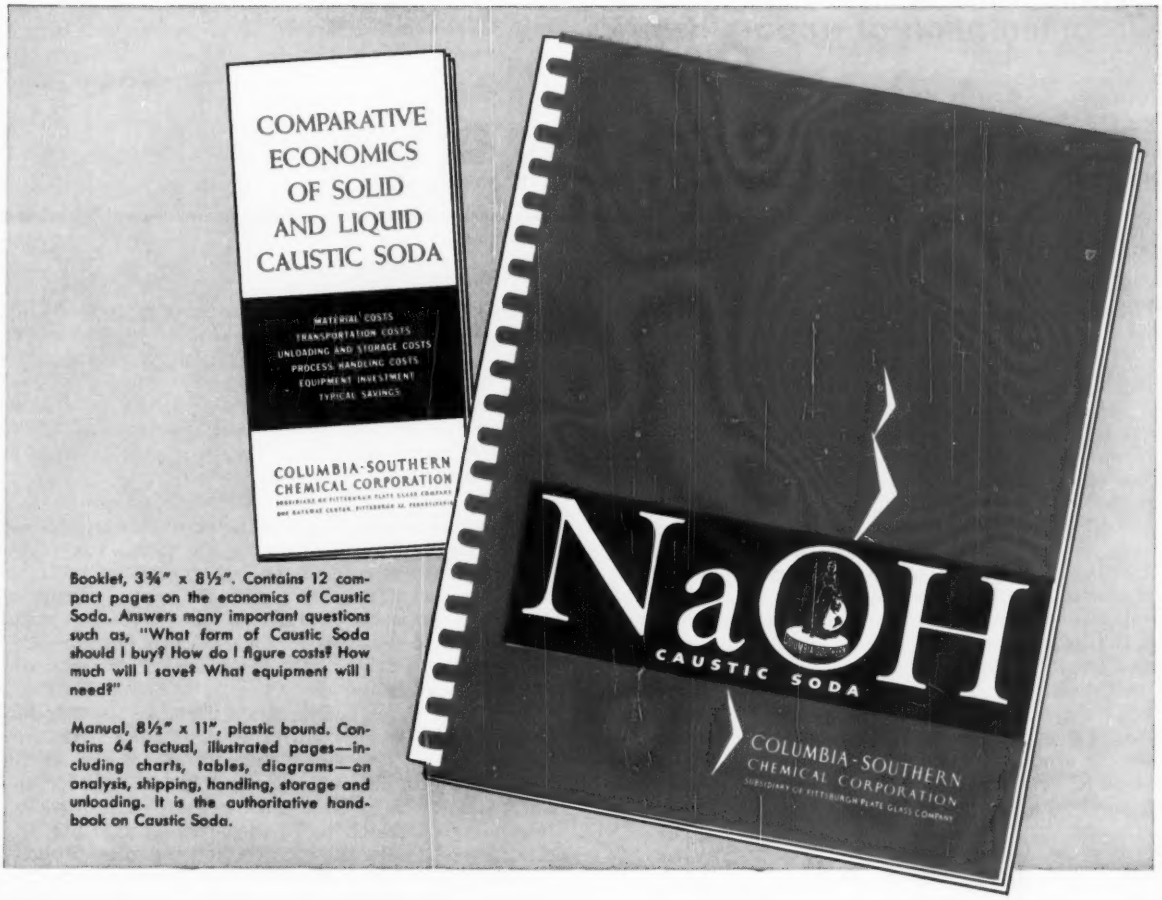
Europe *(Continued from page 44)*

Other European News—Imperial Chemical Industries, which has been financing 75% of its expansion from internal resources, announced it would float a 40 million pound sterling ($112 million) loan, due 1977–79, which will lift capitalization to 182 million pounds. The funds will be used for polyethylene, nylon polymer, plastics and titanium metal. . . . Snia Viscosa has signed an agreement with the Italian oil combine Agip-Mineraria (an ENI group affiliate) which will see the oil firm developing properties in Anna and Catania provinces held by Snia. . . . Viscose Francaise has taken over the five main French rayon groups, Givet Izieux, Comptoir des Textiles Artificiels, La Participation Viscose and La Societe Immobiliere des Textiles Artificiels—as well as Viscose Francaise. Combined capital will be worth some $8.5 million.

Design "Piracy" Suit Settled

A consent judgment permanently restraining Reliance Intercontinental Corp. from copying the "Durasuede Print" line of M. Lowenstein & Sons, Inc. was entered recently in the New York Supreme Court. The judgment also enjoins Reliance from advertising or otherwise representing that Reliance apparel are made from Lowenstein fabrics.

The court order followed settlement of a suit brought by Lowenstein against Reliance. Lowenstein charged Reliance with pirating the Durasuede line and having skirts with the patterns manufactured in Japan. Damages of $100,000 and an injunction were asked.



Booklet, 3¾" x 8½". Contains 12 compact pages on the economics of Caustic Soda. Answers many important questions such as, "What form of Caustic Soda should I buy? How do I figure costs? How much will I save? What equipment will I need?"

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Third of a Series

SPOT DESIGNS

By Victor Lobl

The ground weave

The ground or foundation weave is a prominent consideration in our study of spot designs. Actually the ground weave is the basic structure of the cloth; it unites the warp and the filling yarn into the desired texture. Yet, looking at such a weave strictly from the stylist's point of view as he sees it in conjunction with figure designs, it takes on a different aspect. Since the stylist is mainly concerned with the embellishment of the fabric he will be inclined to view the ground structure as a foundation or as a floor area on which figures or fancy effects can be displayed to enliven the appearance of the cloth. The experienced stylist knows that the most useful foundation weaves for this purpose are simple weaves of small repeats. Such weaves have the advantage that they do not form a pattern of their own, therefore, they do not detract from the appearance of the motif placed upon it. The most commonly used foundation weaves are illustrated in Fig. 88a, b, c, d, e. This group of basic weaves undoubtedly is well known and thus needs no further introduction.

They are: a. plain weave
b. three harness twill
c. four harness twill
d. four harness satin; also known as the "crowfoot or four harness broken twill".
e. five harness satin

In these diagrams filling face weaves are illustrated but their corresponding counterpart in warp face are applicable for this purpose just as well.

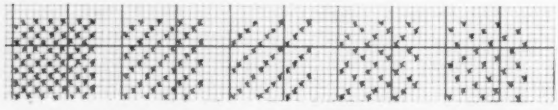


Fig. 88—The more commonly used ground weaves.

The plain weave is the most suitable form of interlacing for light and medium constructions and for this reason it is the natural choice for most classes of apparel fabrics, particularly when it comes to selecting a background weave for spot designs. Let us take a closer look at this stipulation to understand the fabric engineer's thinking along this line. The explanation given below applies more or less to all types of spot weaves although our attention is focused here especially to the type of weaves under consideration.

1. In the manufacture of fabrics for apparel usage texture and design are not the whole picture by any means but with emphasis on economy in the bulk of the apparel trade the utility factors are to be counted in also. These requirements can be answered best with the good old stand-by—the plain weave. The inherently close interlacings of the plain weave provide greater strength and better resistance to wear than any other known weave—construction, material and so on being equal.

2. When spot weaves are used to ornament the monotonous face of an all-white or unicolored material the only means of rendering the motif discernible to the eye is the contrasting light reflection brought about by the manner in which the motif interlaces differently from the foundation weave. As the plain weave has no floats of its own, it provides the best background contrast to the motif and for that reason it is employed in the vast majority of apparel fabrics.

Twill and satin backgrounds are less popular for the following reasons: owing to their loose structure, the twill and satin weaves tend to obscure small figure outlines, unless the ground structure is sufficiently condensed by close setting of the ends or picks, depending on which series of yarn produces the design. Such closely set constructions require proportionately finer yarn, otherwise the cloth becomes too heavy for apparel fabrics. The heavy weight construction is desirable rather for the household and furnishing trade for such usage as draperies, bedspreads, table cloths, napkins, seat covers and similar uses, but is not suitable in the apparel fabrics trade.

Another point to be considered here is the price angle. Any increase in the construction adversely affects the cost. The bulk of the apparel production goes into garments of modest price that cannot absorb the cost of a texture that is composed of fine yarn and high thread count. The manufacturer of such goods usually caters to a small exclusive trade where the price is of little importance. Among these fabrics are some of the most expensive high style materials to be used for evening gowns, wedding dresses and other formal attires. Most of this production features elaborate jacquard designs which in themselves create an atmosphere of prestige to the maker as well as to the user.

Light weight apparel fabrics for summer wear are mostly woven on a plain foundation. The necessarily closely spaced twill and satin weaves are not suitable for sheer cloth.

3. An equally important item of consideration in selecting the ground weave is selecting one that will join the figures properly. Long floats if allowed to run into the design tend to produce hazy figure contours. Should that happen, the thus lengthened floats can be shortened or fitted to the figure by inserting additional raisers or sinkers as the case may require. A five harness warp satin ground weave, for instance, will match up well with a figure drawn in five harness filling satin. Similarly, a four harness filling twill

foundation joins properly a four harness warp twill spot. However, a five harness satin weave in the figure is not easily joined with a four harness weave of any kind and vice-versa.

drafting. Defects in the distribution are hardly noticeable by seeing one repeat only but they become more obvious if the continuity and connection can be observed.

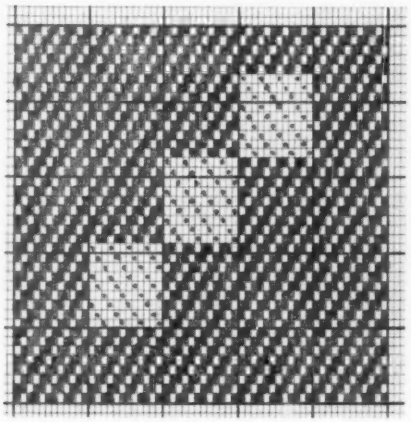


Fig. 89—Spot Weave on three-harness twill foundation.

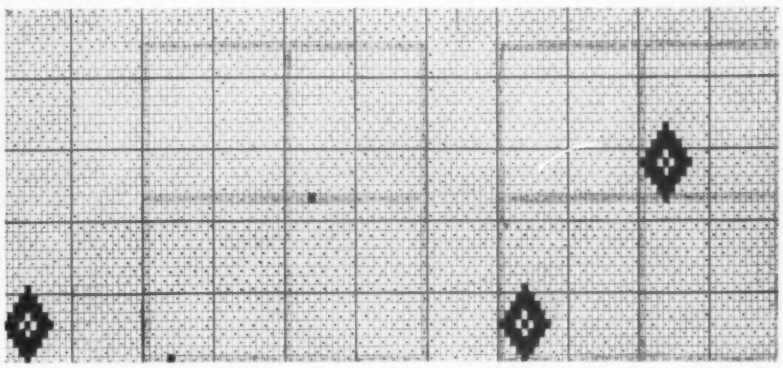


Fig. 90—The motif.

Fig. 92a—The repeat area is marked off and divided into 4 equal sections. The 2 filled-in blocks are the starting points.

Fig. 92b—The completed design.

Fig. 89 is an example of a three harness filling twill motif placed upon and joined properly on a three harness warp twill foundation. By observing this illustration you will note the even breaks between the two kind of twills and how the direction of the filling twill opposes that of the warp twill.

Geometrical spots such as diamonds, rectangles, circles, in fact any figure can be joined easily with a plain weave ground. On occasion it may be necessary to move the figure one end or one pick either way in order to avoid making contact with the ground weave. Such small adjustments are not noticeable in the cloth especially if the spots are placed some distance apart.

Method of distributing spot weaves on design paper

After the decision has been made concerning the conditions which we have discussed in the previous articles,* namely, the construction of the cloth, the ground weave, the figure itself and the order of distribution, the next task the designer is confronted with is the drafting of the weave diagram on the design paper. For the purpose of illustration we shall take a specific case and follow it through the various steps as it is handled in practice. The general explanation of this case will be representative and the method used here applicable to any shape figure and texture. According to our task we take upon ourselves the functions of a designer and assume the following specifications have been handed to us:

Ground weave: Plain
Construction: 96 x 64
Spot design: The motif shown in Fig. 90
Spot distribution order: Plain weave
Spacing of the spots: ½ inch plus 10% apart in warp direction and ½ inch apart fillingwise.

The figure itself is included in these dimensions. The appearance of the motif in the cloth is approximated in Fig. 91. In any design where the spot distribution is of major importance it is advisable to sketch several repeats on a piece of paper so that any objectional features can be detected before the actual

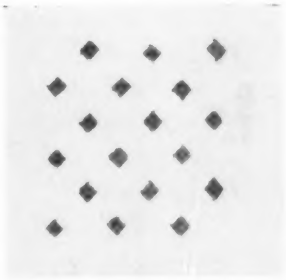


Fig. 91—The pattern.

1) The first step is to select a suitably ruled design paper, i.e. one that presents the figure weave and the distribution in the proper proportion. The determining factor in this respect is the ground construction of the cloth, which in this case is 96 x 64, or more specifically, 96 ends and 64 picks. If both numbers (96 and 64) are divided by 8 it gives us the equivalent ratio of 12:8. Accordingly, it will be best, in this instance, to use a paper in which each square block is divided into 12 horizontal and 8 vertical spaces. You will note that this is the paper we have been using for the illustrations. For other designs there is draft paper to match or closely approximate almost any construction.

Designers who are engaged in drawing large scale figures prefer to use a paper with the ground weave printed on them in form of small dots. Such paper expedites the process of drafting and it also serves as a guide in joining the figure with ground weave properly. The dots earmarked for omission can be painted over in white. The right junction between figure and ground is important to insure a clear contour of design.

2) The next step is to determine the size of the repeat. According to the specifications designated above, the figures are to be spaced ½ inch apart in either direction with 10% added to the picks. This 10% addition is made for the purpose of producing an elongated arrangement in the warp direction. (For detailed explanation read the comments to Figs. 79,

* August issue, p. 33; October issue, p. 52.

81 and 82 in the August issue). Inasmuch as the figures are to be spaced ½ inch apart in width on a 96 ends construction, the repeat in that direction encloses 48 ends (96 ÷ 2 = 48). The filling construction was given as 64 picks per inch; one half inch plus 10% of that number is 36 picks. (64 ÷ 2 plus 10% = 36 the nearest even number.) Thus the repeat consists of 48 ends and 36 picks. You will note that the warp provides the width of the repeat, while the filling produces the length of it. Furthermore you will note in determining the size of the repeat that we have considered the ground construction only. The reason for doing so can be explained with the fact that the ground construction is the basic platform on which the figures are dispersed.

3) The third move is to mark off the repeat with imaginary (subdued) pencil lines as shown in Figs. 92a & b or by means of small dots in the plain weave sequence as indicated in Fig. 93a, and Fig. 94.

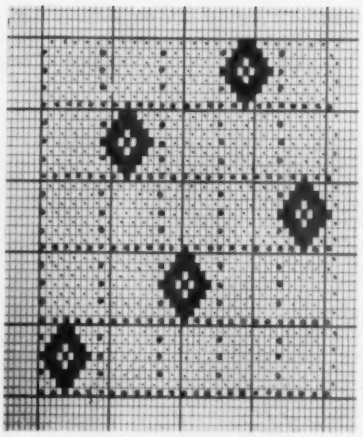
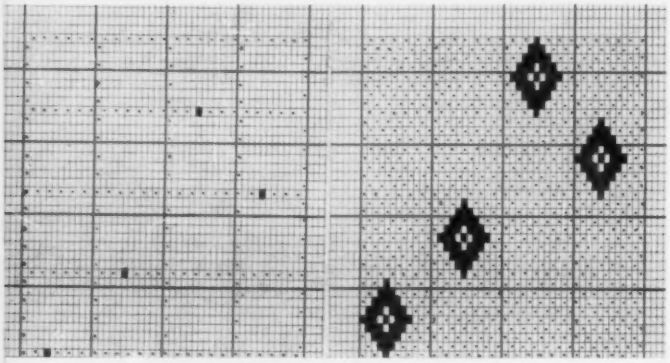


Fig. 94—Five harness satin distribution.



a b

Fig 93 a & b—Four-harness satin distribution.

4) The repeat area is then divided into four equal sections by running a horizontal and a vertical line through the center. (Fig. 92a) These four sections facilitate an alternate order motif distribution as required by the specification.

5) The following operation is to mark a starting point in every section where a spot is to be placed. Since the spots are to be arranged in plain order there will be a starting point in the lower left and upper right section of the four-way divided repeat. To insure a balanced distribution, the starting points should occupy the same relative position within each respective section throughout the repeat. The filled-in blocks of Fig. 92a illustrate these points.

6) The spot design is then copied on the proper sections by using the filled-in blocks as starting points. In whatever manner we have commenced from the first starting point, the same process should be applied to all others. The method is shown in Fig. 92b.

7) The final stage in drafting the spot figure on design paper is to fill in the ground weave. Obviously, in such cases where a paper is used on which the ground weave is printed in advance, this part of the job becomes unnecessary. (Fig. 92a and b)

The proper figure outline is achieved by having the weaves join correctly, that is to say, that the edges of the ground do not weave flat with the figure. To accomplish this requirement it is imperative that a sinker of the ground links with a raiser of the figure and in like manner a raiser of the ground comes next to a sinker of the figure. How well this is done depends on where the first raiser of the ground is placed; hence the reason for carefully selecting this point.

An illustration of the foregoing conclusion will be found by examining Fig. 95a, b, c. In all three examples identical motif designs are used, however, by inserting the ground in b and c incorrectly, those designs became distinctly different from what they were intended to be.

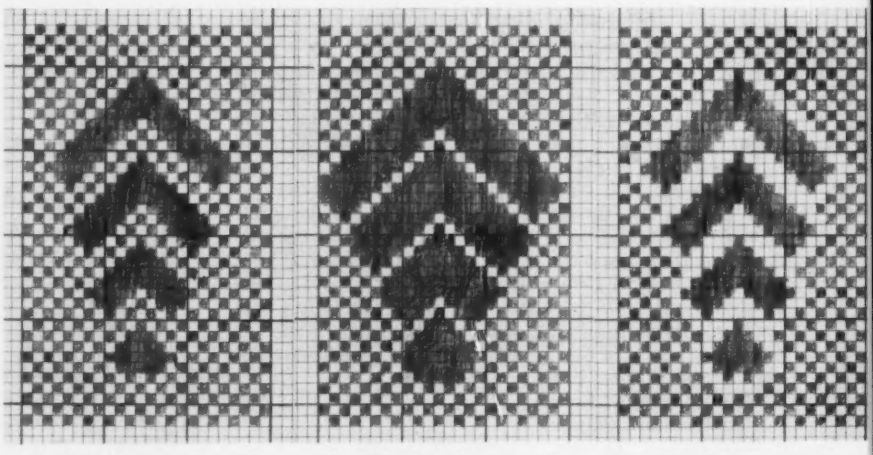


Fig. 95a—Ground weave joins figure correctly.

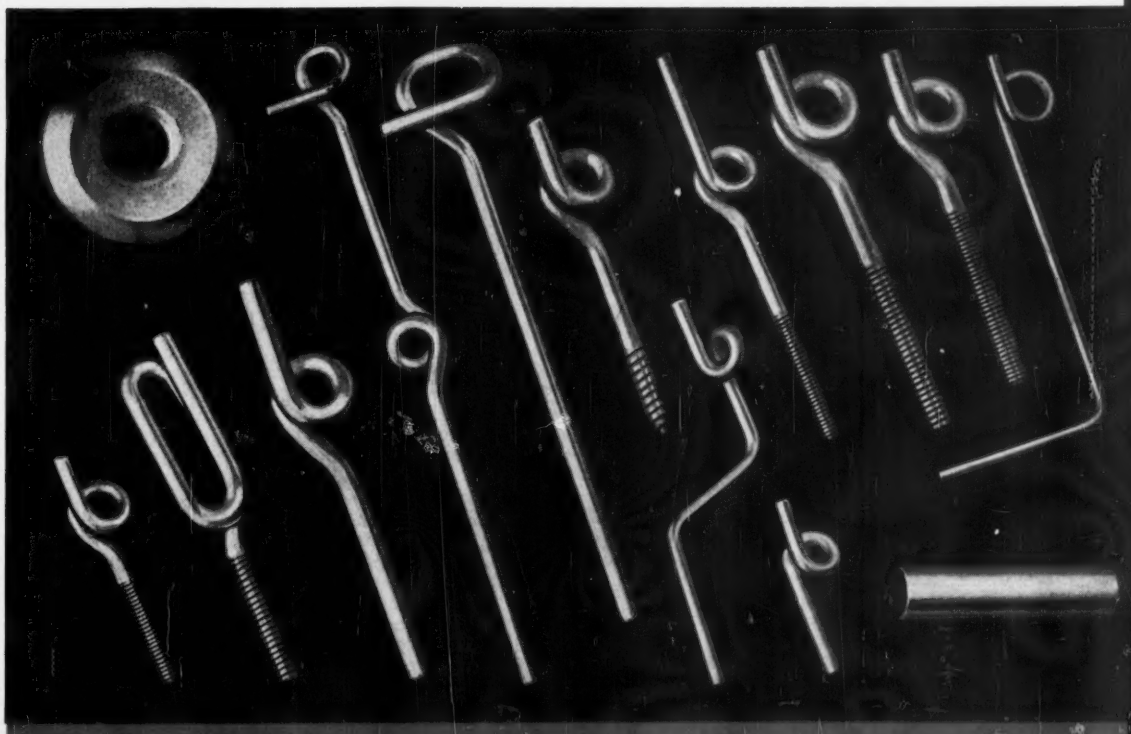
Fig. 95b—Ground weave joins figure incorrectly.

Fig. 95c—Ground and figure join incorrectly.

The correct joining of the figure with the ground weave is shown in Fig. 95a, which also illustrates the desired design effect. As shown in this case, the first small square on the bottom left hand corner indicates

(Continued on Page 58)

MACHINERY and EQUIPMENT SECTION



MITCHELL-BISSELL

SATIN FINISH *Chromium Plated Guides*

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Mitchell-Bissell originated the Satin Finish for porcelain thread guides and pioneered its application to chromium plated guides on the principle that by breaking the contact between yarn and guide, tension and consequent thread wear are reduced. This broken contact is achieved by providing a fine granular surface for the guide. Because of the special preparation of the wire, this "hill-and-valley" contact surface of our Satin Finish Chromium Plated Guides is permanent and the hard, dense finish itself remains dull and satiny almost indefinitely.

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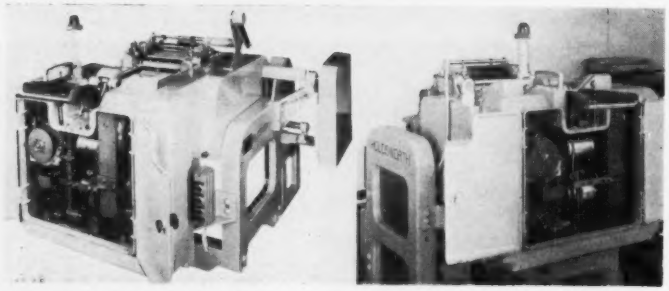
MITCHELL-BISSELL CO.

New MACHINERY

New EQUIPMENT



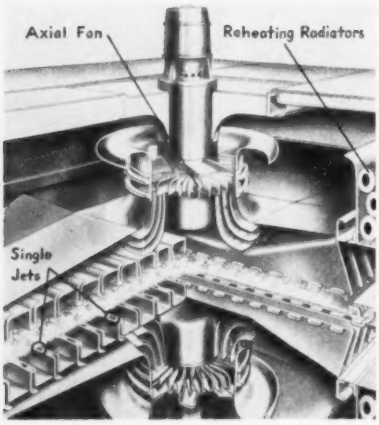
Gill Reducer for Can Delivery

Gill Reducer for Ball Delivery

High Speed Gill Reducer

Holdsworth Manufacturing Co., Inc. is now offering a high speed, single head, heavy duty gill reducer, equipped for single can or single ball delivery with the Raper Autoleveller. The autoleveller automatically varies the draft of the gill reducer to which it is applied to insure a constant weight delivered by the front rollers, independent of any variation of thickness of the ingoing sliver.

According to the company, autoleveller gill reducers, when used after noble or French combing, show considerable increase in the efficiency of the operation, and allow the top maker to deliver a superior top of maximum evenness and guaranteed weight.



Lay-on-Air Dryer

"Lay-on-Air" Dryer

Cosa Corp. has introduced to the American market a high speed German-made dryer for use with curing, polymerizing, shrinking, pigment dyeing and other finishing processes. The dryer utilizes a "lay-on-air" single pass, forced convection drying system.

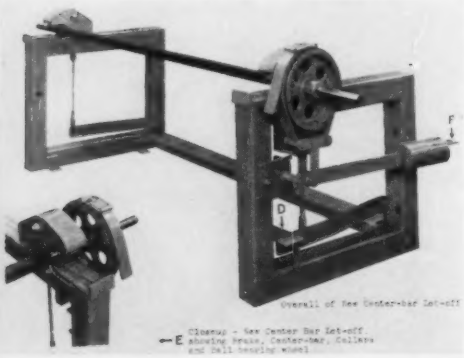
Fed and held by one pair of rollers at each end of the dryer, the fabric floats free and tensionless between two single-jet blower systems above and below. The rollers control speed and desired fabric stretch or shrinkage. No mechancial suspension is used and there is no injurious contact with internal hot surfaces. According to the company, the system provides a drying efficiency of up to 90 lbs. water evaporation per sq. yd. of dryer per hr.

Center Bar Let-Off

A new heavy duty, extra strong center bar let-off which can be bolted to the floor or attached to a machine, has been developed by Mount Hope Machinery Co. The center bar, in operation, rotates on rugged phenolic casters which are designed to withstand the shock of a heavy roll hitting them when the roll is put in place.

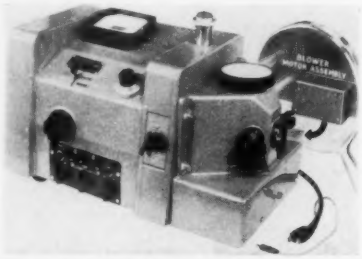
Special guides position and hold the bar laterally so that the brake drum and the brake bands are aligned perfectly and prevent sidewise motion. A self-locking clamp automatically locks and holds the center bar when it is pushed into place with the locking mechanism protected by a heavy steel case.

New Center Bar Let-off



Overall of New Center-bar Let-off

Closeup - New Center Bar Let-off showing brake, Center-bar, Collars and Ball-bearing wheel



Dual-Purpose Colorimeter

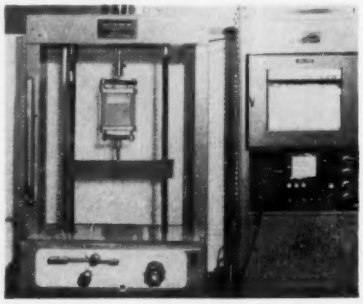
Instrument Development Laboratories, Inc. has added a new cooling system and air filter to its Model C Color-Eye, which is designed for quality control of industrial colors in raw materials and finished products. It performs the dual functions of an abridged spectrophotometer and a tri-stimulus colorphotometer in analyzing color formulations, determining metameric conditions and quickly measuring color differences in hue, value and chroma. The new cooling system reduces the temperature rise at sample ports and maintains it at a point where rapid analysis of colors is possible. The new filter removes dust from the incoming air to prevent dirt deposition from decreasing the sensitivity of the optics.

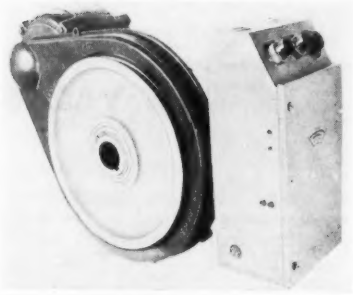
For further information write the editors.

New Testing Machine

Model CET, a completely new and radically different addition to the Scott Tester, Inc., line of physical test apparatus, was recently introduced. Designed to test materials and constructions on a single machine, the Model CET is a constant-rate-of-elongation tester with a broad range of speeds up to 40-inches per minute, lengths of strokes up to 72-inches, and infinitely variable loading between 0 and 2,000 pounds. The electric weighing system employed is reported to be the most precise known (accuracy within 0.25 percent), being free from inertia and accurate at all stages of the test cycle. Stretch of the specimen being tested can be magnified on the chart up to 200 times actual.

New Constant-Rate-of-Elongation Tester





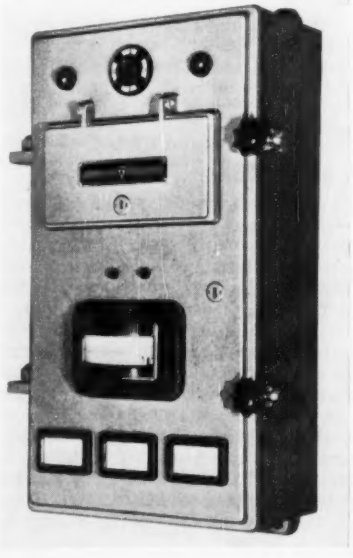
Individual Card Drive

A new concept in operation and design of an individual card drive has been developed by Precision Gear & Machine Co., Charlotte, N. C. This individual drive, the company reports, eliminates all over-head shafts, motors, pulleys and belting in the card room. The new card drive thus does away with costly line maintenance, unnecessary down time or idle cards, due to line shaft belting failure. The card drive is a compact "package" unit, including motor, drive and control box—ready to install, with nothing additional to purchase or install.

Automatic Moisture Control

Mahlo Electro-Mechanical Works, Germany, has introduced their Textometer, which controls the moisture content of fabrics and warps coming out of textile dryers and slashers. According to the company, the slightest deviation from set moisture percentage is immediately corrected without over-compensation. This prevents fabrics from dampening or warps from sticking together so that the machine must be run at low, inefficient speeds.

The operation is said to be based on the close relationship between the moisture content of a given textile and its electrical conductivity. Electrodes, in the form of rollers or feeler units contact the textile and transfer conductivity readings to the Textometer, where the corresponding moisture value is indicated. A pilot motor automatically changes the machine speed. Differences in weight, thread count or yarn number of the material are said not to affect the transfer conductivity readings.



Philip Interlock Machine

The Philip multi-feed interlock knitting machine will be built by Supreme Knitting Machine Co., according to an announcement by K. J. Trading Corp., distributors of the Philip machine. The machine is said to knit 45 strips per hour on a continuous production run.

It was also announced that Supreme Knitting Co. has developed a machine called Stitch-O-Meter, which enables the knitter to achieve exact stitch uniformity while the machine is in operation without losing any time. The instrument eliminates horizontal streaks and also permits the operator to check stitch counts and weight of fabrics while the machine is in operation.

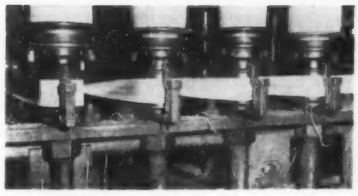
Seam Inspector

Birch Brothers, Inc. has announced a new seam inspecting, sewing, and winding machine designed for the inspection of seams in large diameter rolls of cloth as received from the gray mill and delivered to the finishing plant. It permits the rapid inspection, reportedly 130 to 260 yards per minute, of seams to ascertain if they need re-sewing before processing. The seam detector is sufficiently sensitive so that the seam is automatically stopped just before it reaches the sewing machine.

New Norcross Viscometers

Norcross Corp. has developed a new line of electric-pneumatic viscometer measuring elements. These new models operate on the basic principle of a falling piston, and are applicable for measuring viscosities from .1 to 1,000,000 cp., for use with Norcross recorders and controllers. An air lifting mechanism is used to raise the piston assembly, drawing a sample in through the tube openings. The sample then passes down through the clearance between the piston and the inside of the tube into the space formed in the lower end of the tube when the piston is raised. The lifting mechanism is then quickly lowered. The time required for the piston to fall to the bottom of the tube, and expel the sample, is a measure of viscosity.

For further information write the editors.



Supr-O-Band Spindle Drive

Benjamin Booth Company has announced a new spindle drive, Supr-O-Band, designed for twisting, roving and spinning frames. The company reports Supr-O-Band offers improved yarn quality and increased production because the tough surface gives long-operating life and provides high friction drive for maximum spindle speed. It can be sewed, cemented, or fastened by belt hooks.

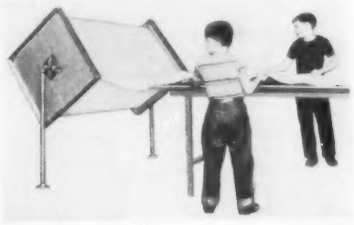
Electronic Air Cleaner

A new electronic air cleaner, the Trion HEV, has been introduced by Trion, Inc., McKees Rocks, Pa., specialists in high-efficiency air cleaning. The Trion HEV, intended for use in commercial buildings, industrial plants, laboratories and specialized applications, is said to provide the cleanest air that is commercially available.

The new unit operates on the principle of electrostatic precipitation, and features automatic maintenance.

Better Plush Container

A cardboard plush container recently introduced by Timron Development & Manufacturing Corp. has the advantages of being a "throwaway" unit—no parts need be returned to the manufacturer. Another advantage is its "self unwinding" feature: even a child can operate it, the manufacturer points out.



With this container, it is claimed, material can be unwound directly from the carton to work tables, eliminating unhooking of material by hand. The new container is said to be 20% smaller and 20 pounds lighter than conventional containers with resultant savings in storage and shipping costs. No damage to carton or material during shipping and handling operations results when this container is used, the manufacturer states.

NEW FABRICS

NEW YARNS

Elasticized Fabric Trend

A strong market swing to more figure-fitting swimsuits and figure-flattering control is the basis for a 35 per cent in volume in its elasticized fabrics predicted by Beaunit Mills, Inc., New York City. The trend to elasticized fabrics, according to Beaunit has been accelerated by the greatly increased use of the new novelties in both woven and knit constructions. Prominence of the sheath in swimsuit design is another factor said to be bringing the elasticized types so strongly to the fore. A return to the two-piece suit, dimly viewed on the fashion horizon, takes equally well to elasticized fabrics, Beaunit points out, with the separate bra of the two-piece demanding a material that gives support and control as well as style.

New Supported Vinyl

Fabron, a new supported vinyl material has been introduced by Jason Corp., Hoboken, N. J. This plastic fabric is finished in a plaid and a tweedy spatter print, and features scuff and stain resistance. Its high strength characteristics are said to permit substantial weight savings. Fabron is priced for volume applications and is available to jobbers and manufacturers in rolls 54″ wide.

Dynel Filter for Fish

Filter Floss, a new aquarium filtration medium, is being offered by Halvin Products Co. It is composed of Dynel and other synthetic fibers scientifically bonded with a non-toxic binder. It is harmless to fish, non-allergic, and does not disintegrate or fall apart in water.

Nylon Georgette

Beaukay, a new nylon georgette has been introduced by Beaunit Mills, Inc. Available in solid tones at 75¢ per yard and print patterns at 85¢ a yard, the cloth comes in a 45″ width, designed primarily for the blouse market. It is fully washable and requires little or no ironing.

Finer Denier Fortisan-36

Celanese Corp. of America has recently made available 270 and 300 denier Fortisan-36 yarns. Prices are $2.30 per pound and $2.05 per pound respectively. Both yarns are 280 filament with .8Z twist and are available on 4 pound cones. Fortisan-36 is also available in 1600, 800 and 400 deniers.

New Soil-Resistant Rayon Carpet Fiber

A new rayon fiber for use in carpet yarns has been introduced by American Viscose Corp. Outstanding advantage of the new fiber, according to its manufacturer, is much greater resistance to soiling than ordinary carpet rayons. Tradenamed "Super-L", the new fiber has been developed especially for looped pile constructions. It is also said to be adaptable to cut pile fabrics in blends with wool, acrylics and other man-made fibers. It is priced at 37 cents a pound and will be offered in any denier required by carpet manufacturers.

According to American Viscose Corp. the new carpet fiber is smooth so that there are no crevices to catch and hold particles of dirt. Tests have shown that the new rayon soils 30 to 35% less quickly than carpets made with other rayon fibers, the company states.

THE TEXTILE DISTRIBUTORS INSTITUTE, INC.

NEWS AND COMMENT

Discussion of Converters' Problems

Members of the Textile Distributors Institute are invited to attend a luncheon of the Textile Salesmen's Association on Jan. 14, at the Sheraton-Astor Hotel at 12:15 P.M. The speaker will be A. W. Zelomek who will talk on the "Economic Position of the Converter." Tickets are $4.50 each.

New Dacron Blouse Fabrics

Fabrics containing Dacron polyester fiber are gaining acceptance in blouses, Du Pont reports. Burlington has brought out a crepe with a dull texture and a warm hand. It is woven of Taslan textured yarn made from Dacron. It has been made up into blouses that wash easily and need little ironing. Weiner Laces has brought out Dacron laces for use on blouses. These also require a minimum of laundering and drying. Barbizon Corp. has introduced a blouse fabric woven of Dacron combined with cotton and nylon.

All-Synthetic Casement Cloth

A new casement fabric, combining Fortisan and a blended yarn of saran and Dynel has been introduced by Anton Maix, Inc. The new fabric is said to have good qualities for use in homes or institutions. Specific advantages of the new fabric are flame resistance; moth and mildew resistance, and the property of being dry cleaned and vacuumed. It is available in 11 pastel shades, 45 inches wide at $5.95 per yard.

Factoring Had Good Year

1956 was the biggest year in the history of Commercial Factors Corp., Walter M. Kelly, president, reported at the year's end. The firm's volume for the year was more than $400 million. A substantial part of this volume was new business in textiles and nontextile fields such as furniture, hardware, and housewares. Kelly said that the tight money market has helped the factoring business. Because of the squeeze on credit, many banks have been unable to handle the loan requirements of medium sized companies. These borrowers have turned to factors to satisfy their needs.

Sheer Fabrics Go Well

Sheers and chiffons are growing in popularity, according to a recent check of the market. Many houses that have not carried sheers are now offering at least one type. Ameritex, for example, has a ruffling organza. Reltex has a flocked organdy designed for the 'teen trade. Other firms are finding the demand brisk for their chiffons, georgettes, organzas and voiles. Skinner has an interesting nylon georgette. American Silk Mills is offering a silk and nylon chiffon said to be permanently pleatable.

New Fabric Handbook

A new "decorators' handbook" is being offered to West Coast customers of Collins & Aikman. The book is a swatched decorators' guide issued to interior decorators, larger upholsterers and department stores. The book was prepared by Dorothy Liebes and Arthur Brill, and it is intended as a selling tool and reference book for the professional decorator and for use in decorative fabrics departments of stores where it will be available for consultation by consumers.

New 100% Dynel Fur-Like Fabric

Andante, a new fabric of 100% Dynel, created to simulate natural sealskin fur, has been introduced by Princeton Knitting Mills, Inc. It is said to be lighter in weight than either real fur or Dynel and Orlon blends. Andante makes its debut in a coat designed by Finger and Fabiner, priced at $110 with hood and $99.50 without hood.

"Bleed"-Proof Madras Plaids

A new line of Madras plaids, guaranteed not to "bleed" when washed, has been announced by S. D. Industries Agency, sales representative for India House Looms. Bleeding (the running of colors into each other) has been due to lack of control over vegetable-dyed yarns used by natives in the Indian state of Madras, the source of Madras plaids. A new finishing process that "sets" the colors has been developed. The improved fabrics are being shown in all-cotton patterns, ranging from rainbow stripes to glen plaids and shepherd checks. The new fabrics are also wrinkle-resistant and shrinkage-free, it is said.

Improved Bra Fabric

Interlon, a nonwoven fabric made by Wellington Sears, has been combined with acetate tricot to provide an inner bra for bathing suits. Introduced by Robby-Len Inc., and Lee Beachwear, the new bra is made by laminating the Interlon to the acetate tricot. Advantages of the new bra construction are said to be retention of its shape when wet; fast-drying; resistance to stretching and shifting out of shape.

IT LOOKS LIKE FUR BUT IT'S FABRIC—This scarf of knitted Orlon and Dynel was given its fur-like sheen and gloss by a new finishing machine manufactured by Turbo Machine Co., Lansdale, Pa.

Spot Designs (Continued from Page 52)

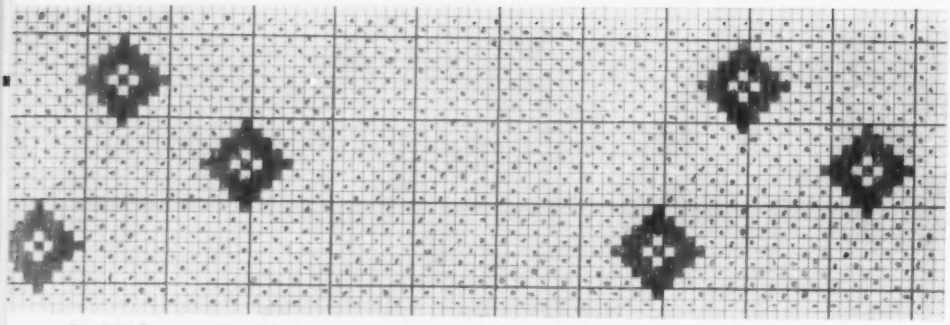


Fig. 96—Spots are arranged in groups of three. It requires 12 harnesses for weaving design in addition to 4 or 6 harnesses usually employed for ground.

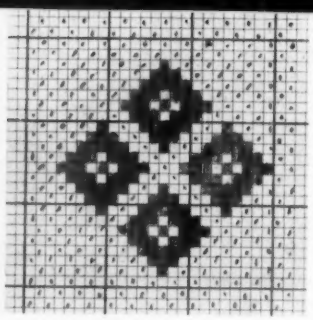


Fig. 97—Spots arranged in groups of four. Dobby design requires 8 harnesses in addition to ground.

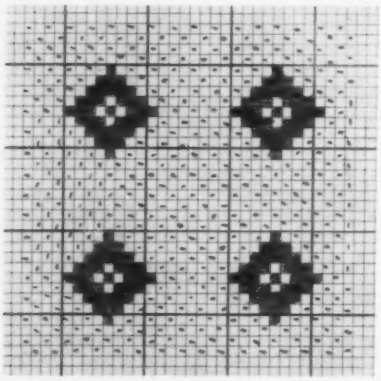


Fig. 98—Spots arranged in group of four. Eight harnesses needed to weave this dobby design in addition to ground.

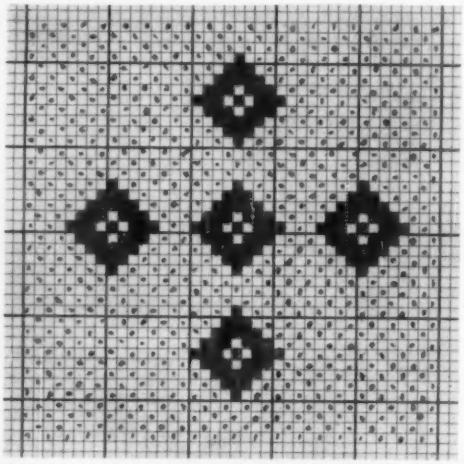


Fig. 99—Spots arranged in groups of five, requiring only 8 harnesses for weaving.

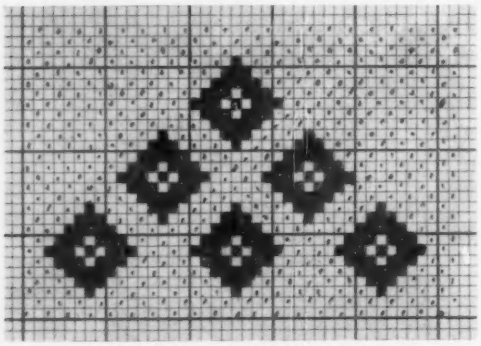


Fig. 100—Six spots form group woven in 12 dobby harnesses, not counting ground.

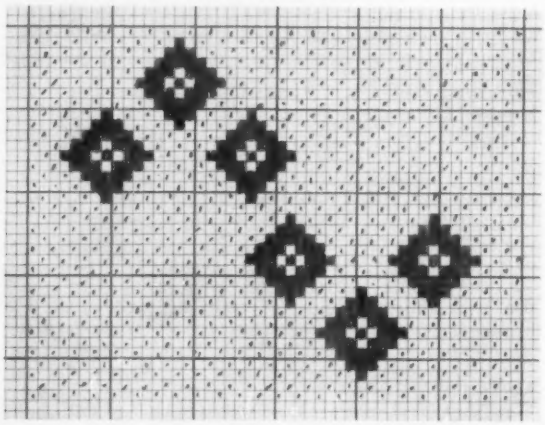


Fig. 101—A different possibility of a 6-spot grouping. There are 19 harnesses needed for this design, not counting ground.

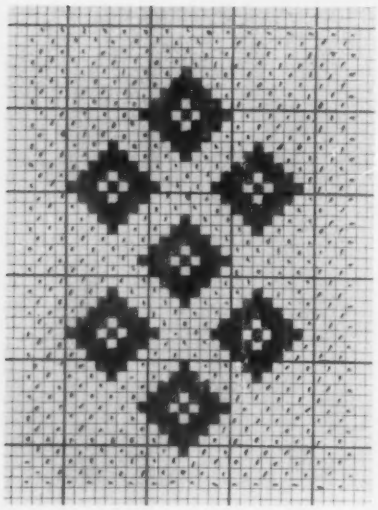
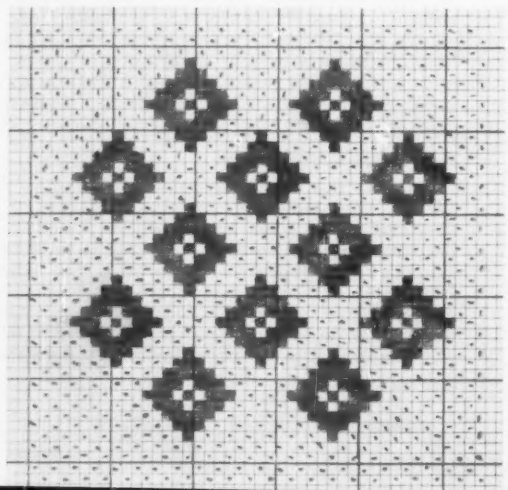


Fig. 102—This group of 7 spots can be woven with 8 harnesses plus ground.

Fig. 103 (right)—Only 8 harnesses plus 4 or 6 for the ground are needed to weave this group of 12 spots. Any number of these small spots can be arranged in such manner that it is possible to weave them on a dobby loom.



a raised warp end. Then continuing to fill-in in the plain weave manner we find that the ground weave does not interfere with the spot figure.

Suppose now, we start the ground weave with a sinker in the left hand corner as demonstrated in Fig. b. The result is obvious, the raisers run into the raised floats of the figure, thereby extending them from five picks to seven picks. The design thus obtained is very much different from the original shown in Fig. a and such uncalled-for modifications are to be avoided.

In order to overcome this error, but starting again with a sinker in the left hand corner, as before, one may choose to stop the plain weave short of the motif as indicated in Fig. c. From a technical point of view there is no objection to this approach of the problem, but it still does not produce the desired design effect. As designer we can never overlook the fact that we not only have to produce a fabric but that it must be made to the desired effect as far as possible.

The above is not meant to imply that it is always best to begin the ground weave with a raiser in the left hand corner, this depends entirely on the position of the design. We merely proposed to demonstrate the importance of making the correct junction between figure and ground. Probably the most convenient method of inserting the ground weave is to start at a point next to the motif and work away from there. The points considered here apply not merely to plain ground weaves but to twills and satin grounds as well.

The four harness satin distribution

As a further illustration of the method used in distributing spot weaves on design paper let us explain the division in a four harness satin order. In this case it is desired to place four spots within the repeat in the proper sequence. The drafting method is illustrated in Figs. 93a and b. By referring to these illustrations you will note the following particulars:

1. The repeat area is 96 x 64; the same as used in Figs. 92a & b, but twice as many motifs will be included.
2. The motif to be inserted is also the same as previously employed.
3. The ground weave is plain.
4. To insure a balanced distribution, the repeat area is divided into 4 x 4 = 16 equal sections in similar manner as explained in point four above.
5. The starting points are arranged in the four harness satin order and they are in the same relative position of their respective sections.
6. Fig. 93b shows the completed weave diagram.

Five harness satin distribution order

Still another example of a drafting of a regular motif distribution is illustrated in Fig. 94. Again the same motif is employed as before but the repeat area is adjusted upward to the nearest even number that is divisible by five. Thus the repeat consists of 50 ends and 40 picks. These are divided into 5 x 5 = 25 uniform sections to correspond with the five harness satin weave and for the purpose of facilitating an accurate spot arrangement. Other details are the same as previously explained.

In the preceding chapter we have dealt with the drafting of regular distribution orders. No attempt has been made to cover all such possibilities, but our purpose was merely to indicate the practical method of handling such problems. A skilled designer or stylist will not confine his choice of patterns to these systematic orders but by his personal experience and on the strength of artistic impulses he will impart originality and distinctiveness to his particular fabric regardless of traditional methods. And so, he may resort to various groupings of the motifs as suggested in Figs. 96-103 for use on dobby looms.

Such groupings of small designs as shown in these diagrams are repeatedly used and we are illustrating them as an example of such possibilities rather than for their artistic merits. In order to effect a comparison with regular distribution order we continued to employ the same diamond motif.

It will be noted that in this last group of designs an 8:8 design paper was used. This type of paper is customarily employed by the designer if he has no other purpose than to illustrate the weave as is the case here. However it must be realized that this gives a false picture of the actual shape of the design as it will appear in the cloth if the construction is not square.

TO BE CONTINUED

Yarn Tests *(Continued from Page 42)*

3. From the integrator or evaluator, read the value of Unevenness, such as "average deviation," "coefficient of variation" or "percent average range."
4. In those cases where the value of Unevenness exceeds the allowable tolerance, re-run the test, this time with the recorder "on." (Note: Since chart paper is expensive, it is used for recording only when the Unevenness value has been found excessive.)

Evaluation

When excessive Unevenness is observed, a chart record is run, as shown in Step 4 above. The chart record will usually indicate the specific machine condition at fault, by revealing periodic high or low fluctuations on the chart record, corresponding to the circumference of the offending drafting roll multiplied by the subsequent draft. Where Unevenness is within standards, the test stops at Step 3 above, and no further evaluation is required. ■

REEVES HONORED—John M. Reeves (center below) chairman of the board, Reeves Bros., Inc., is shown receiving the 6th annual "textile award" from J. Morton Curran, Jr. (left) chairman of the New York Board of Trade's Textile Section. On the left is Floyd W. Jefferson, co-chairman of the board of Iselin-Jefferson Co. who was one of the speakers at the award luncheon in New York City last month.

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new trends in

PILE FABRICS

Gerald E. Herrnstadt,
FIRTH CARPET CO.

The pile fabrics industry is moving faster these days. Here are some of its new ideas

THE DICTIONARY defines "pile" as a mass of things heaped together. Therefore, falling into the category of pile fabrics are all those materials which have fibers extending upward or downward from a flat base, whether they so extend as loops, tufts or individual threads, as long as they form the wearing surface of the end product.

Creating pile fabrics is an old art. However, this division of the textile industry has—more often than not—been just as backward in its progress as the textile industry as a whole. Certain methods of process and manufacture have been utilized for over one hundred years. As recently as the early decades of the 20th century, these same routines were used over and over again to manufacture identical or related products.

The fabric designer varied the appearance of his products with new colors and changed patterns to conform to the taste of the times. But he made no attempt to become an originator by making new types of products which would in turn create additional demand. Manufacturers of pile fabrics neglected, in most cases, to work with technologists or engineers to improve the construction of the fabric itself. Looms and knitting machines were used in a conventional way with only occasional and superficial changes in process and product.

Dr. Gerald E. Herrnstadt

Dr. Herrnstadt is head of the patent and development department of Firth Carpet Co. A graduate of the Berlin Institute of Technology he holds a B.E. in mechanical engineering and an M.E. in industrial engineering. He completed graduate studies in patent law at Columbia Law School and holds numerous fabric and machine patents in the field of textiles. He has been associated with Firth since 1950.

The pile fabric division of the textile industry believed itself justified in being lethargic. Most manufacturers claimed that business was poor because it was seasonal. Demands for their products were said to be slackening. But, meanwhile, other industries such as the automobiles, aircraft, chemicals and others spent fortunes for research and development in order to utilize new processes and machinery to make newer and more desirable products. *They* became style leaders, gently prodding the public into first accepting and then demanding their products. Who *really* needs a pink refrigerator or an automobile with 300 horsepower?

It is also within the power of the pile fabric industry to become style leaders. Fortunately, some new tendency in this direction has been developing in the past few decades. What is this trend which has been forced upon the manufacturer by the consumer who is constantly exposed to high pressure advertising and salesmanship? He, or more correctly she, is now demanding new pile fabrics to fit the scope of modern life. Appearancewise, some of these demands are: newer and brighter shades of color, new textures and ease of maintenance. These, rather than new types of flowers or designs, represent the modern trend. This explains why more and more machines are put on pile fabrics representing reproductions of handmade materials such as tweeds, satins or damask. These are then combined into a texture which, as one manufacturer explained, brings the outside of nature into the home of the consumer.

Pile fabrics are many things. There are household articles such as terry, towels, plushes, upholsteries, carpets and rugs as well as certain types of bedspreads. In the apparel field there are velvets, bathrobes, imitation fur, trimmings and the like. In the industrial field including the automotive industry there are weather strippings, trimmings, insulations,

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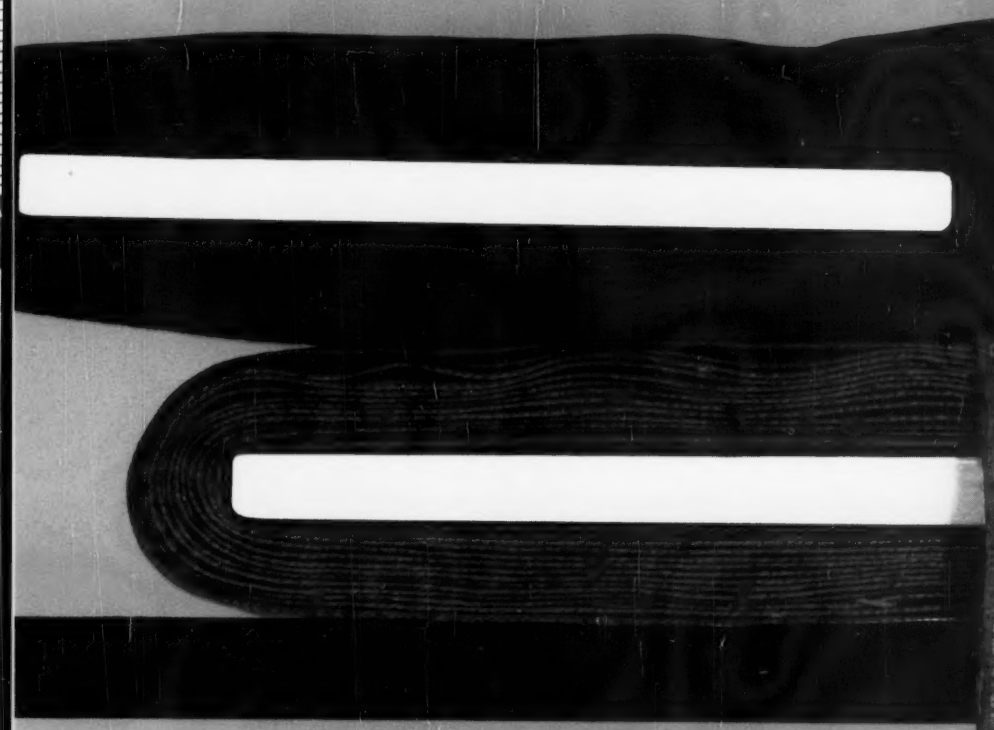

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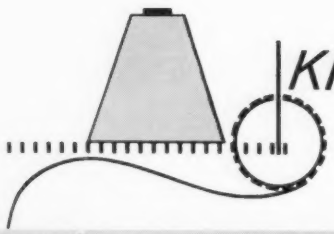

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Pile Fabrics

(Continued from Page 60)

paint roller covers, all of which fall in the pile fabric category.

Modern pile fabrics are manufactured by five major methods: woven, knitted, hooked, tufted, and so-called non-woven.

Woven Pile Fabrics represent, yardagewise, the largest quantity of all pile farics made. Some are produced by the weft-woven process wherein the pile is created by cutting floated wefts as part of the finishing operation. The best known materials made on this process are: weft-plushes, corded plain and figured velveteens.

Warp-woven materials, such as terry cloth, are conveniently produced by means of given motions of the reed in conjunction with a warp easing arrangement. Most other classes of warp-pile woven fabrics have their raised portion formed with the aid of pile wires. Also, there are the double woven materials wherein pile threads from a warp or creel are interwoven between an upper and lower ground fabric. They are finally brought in contact with a cutting knife which splits the original single unit of fabric into two separate pieces, thereby creating the pile. Under the category of warp-woven pile materials are: mantle fabrics, upholsteries, hangings, trimmings, velvets, wilton and brussels carpeting, etc.

Axminster fabrics are exclusively made and used for floor coverings. In axminster weaving a multitude of colors, according to a predetermined pattern for each pile row, is put on spools. Yarns from these spools are then inserted around double weft ends and form the tufts, when cut off.

Chenille fabrics require a double weaving process, first to weave a blanket which is cut between rows of warps into strips. These strips form the chenille. A major advantage of chenille fabrics is that unlimited amounts of colors may be used. Chenille may be inserted as weft to create surface and pile effects in a fabric, or it may be sewn on cloth to create a pile. Chenille fabrics are used for tapestry, upholstery, bathrobes, bedspreads and, in lessening amounts, for floor coverings.

Novelty fabrics are those woven pile fabrics which deviate from the previously mentioned conventional types and use other means instrumental in making the pile surface.

The style trend of nearly all woven pile fabrics has been in the direction of changes in texture. The modern trend is not to put new and intricate patterns into the face of the fabric, but rather to give a complex appearance of texture by unconventional interlacings of warp and filling. Combined with this, the use of several types of fibers or yarns within the surface of the product adds to novelty of texture.

Just as essential as good styling in woven pile fabrics, however, is the search for new and more modern ways to make them. The amount of yarn used in the wearing surface of pile fabrics is the most costly part. Pile yarns cannot and should not be reduced at the expense of lowering the quality of the end-product. What then are some of the modern trends in the mechanical aspects of weaving pile fabrics? To mention a few:

Sauer of Germany developed a new terry loom in 1953 which is said to supersede all prior known speeds of terry weaving. Hargreaves of England disclosed new weaving methods for terry with specific improvements of the loom mechanism. Crompton & Knowles designed a special jacquard mechanism for terry. For the same weave C. F. Libby developed a new selvage construction in which locking against fraying is achieved.

PILE FABRICS ARE STRONG IN FASHION—Coats, hats and handbags of these models are cut from pile fabrics made of the newer synthetic fibers. Use of these fibers in both woven and knitted constructions have added a new dimension to pile cloths and a new dimension to womenswear fashions.

A new Axminster loom by Crabtree of England has two gripper units instead of the conventional one. A. I. Borodin of Soviet Russia described a new pile fabric loom developed there in 1953 which is said to run most efficiently at 230 picks per minute. N. Ott of Germany developed a pile fabric loom wherein the crankshaft is replaced by electronically guided parts. K. H. Hente of Germany proved statistically that the excessive losses of materials in automatic bobbin change looms with high speed frequently offset the financial advantage gained by that speed.

Since warp pile looms of the wire type are costly, many attachments have been developed in which such pile fabrics may be made on a standard cloth loom by simply adding these attachments. Employees of Marshall-Field developed a unit which consists of a series of pile finger guides mounted for vertical and lateral movements, which extend parallel to the warp and serve to loop the pile yarn under these fingers. Bates Manufacturing Co. developed a similar attachment in 1956.

For wire looms new types of wires became a patent fad both in the United States and abroad, their primary purpose being to give a texture of irregular tufts or loops. Picking of England patented a carpet loom making the Persian knot. Balbe of France developed a circular weaving loom for weft pile fabrics wherein the weft is inserted by steel tapes, two at a time. Cowburn of England described Wilton looms which operate on the double plush principle. Wilhelmus of the Netherlands found a method for the production of patterned double woven pile fabrics having floating pile threads.

These are but a few examples of technical activity in the woven pile fabric field. Quality control is a

thing which is stressed more and more and is becoming a by-word in the industry. One thing is certain: more developments have taken place and been put to use in the last 20-30 years than ever before. Some people may wonder if the weaving industry is too late with all this. In response to this it should be said that speed alone is not the answer. It must be a joint effort of the weaving and finishing process, combined with new devices and increased efficiency.

Knitted Pile Fabrics

Knitted Pile Fabrics are those knitted fabrics which have at least two series of yarns, one of which forms loops longer than the other. As those warp loops are left in their original form, the final fabric may resemble boucle, frieze, terry or other loop type fabrics in the woven field. Napping, brushing, shearing and automatic cutting devices of those loops will give the fabric the desired appearance of textured cut pile fabrics, plush, velvets or velveteen. The basic machinery used in knitting are the circular machine and the so-called flat-bed machine, producing fabrics in tubular or broadcloth form, respectively.

With few exceptions the manufacturers of knitted pile fabrics have been just as lethargic in applying their equipment to modernization as have those in the weaving industry. It is interesting to note that Townsend of Leicester, England developed many forms of making knitted pile fabrics in 1856, in loop or cut form, in solid and multiple colors and even with Jacquard design. As far as it is known, no one has yet exhausted the possibilities of his disclosure.

Furthermore, circular machines which have been considered new advancements in the 20th century when used for pile fabrics were developed by Mundella of Germany in 1857; by Lamb of Germany and Bickford of England in the 1860's; by Rauscher of Germany in 1862, and by Poron Freres of France in 1875.

In the United States these inventions were not advantageously used for nearly three quarters of a century. Finally, in the 1920's, knitted pile fabric manufacture became a factor in the industry. At that time, the development of Astrakan fabrics, certain chenille type trimmings and raised pile bedspreads and draperies spurred the knit goods and pile fabric manufacturers into action.

To-day, knitted terry fabrics are in great demand and are produced on loop wheel, sinker wheel, or on circular latch-needle machines. A now common construction of knitted terry is described by McAdams in a U. S. patent issued to him in 1934. In the late '30's and early '40's Princeton Knitting Mills produced various new types of pile fabrics, one of them comprising floated yarns which were staggered in the uneven numbers of courses and not floated in the even ones.

Hemphill Co. made a pile fabric on a circular loom with different sizes of loops, thereby incorporating a figure in the pile surface. Sinker wheel machines in England were started to be used for damask imitations and plush materials.

One of the best known late achievements in knitted pile fabrics was the development of imitation fur which was first commercially explored by the Borg Co. of Delavan, Wis. and was assigned to them by patent in 1953. Carney of Philadelphia developed a knitted chenille which is said to be advantageous over the woven one by the fact that it is cut while it is in the machine. Beacon Looms developed knitted pile fabrics such as draperies and numerous trimming materials. Mohasco Industries are said to have combined the weaving and knitting principle to make carpets. Many corduroy fabrics now appearing on the market are also found to be knitted.

Just recently, due to the increasing importance of knitting in the pile fabric industry some new machinery has been offered for sale. A new English loop wheel machine for single or double plush is said to produce 150 yards of velveteen in 8 hours. Kidde Manufacturing Co. developed a Raschel type machine making various types of pile fabrics at a speed of above that of weaving. C. Meyer of Germany claims to have a convertible pile fabric knitter running at 440 courses per minute for pile fabrics and up to 750 courses for flat fabrics. Supreme Knitting Machine Co. developed a machine for loop type fabrics and Wildman Co. and others developed machinery for making fur type fabrics. The Karl Lieberknecht Co. developed a loom which is said to make upholstery and related fabrics at a speed of about 160 courses per minute. The Turbo Machine Co. is extremely active in the field of finishing machinery for fur type fabrics.

The advantages of knitting over weaving are said to lie in the fact that the process of manufacturing is more rapid and more versatile. Manufacturers claim to be able to make many products of different types on a knitting machine, whereas they find weaving looms restricted to the type of fabrics for which they were originally designed.

The activity of knitting in this field, of which only a few examples were given, is increasing steadily. The future of knitted pile fabrics may well depend on new fibers and new products, as well as on chemicals and finishing processes developed for them, so that their quality and stability can become equal or even superior to those of their woven counterparts. Actually, knitted terry, upholstery, plushes and other type pile fabrics are making inroads on their woven counterparts.

Hooked and Tufted Pile Fabrics

Another field are the *Hooked Pile Fabrics* which are often mistaken as an American contribution to the pile fabric industry. But, they were known to be made in ancient Egypt and subsequently were marketed as "brodded" material in the English midlands. These fabrics are still made by pulling loops of yarn through a backing material with a needle type instrument serving as a yarn guide. This has been more or less a handmade process.

In 1950 a Joseph Miller and Richard C. Kline developed a needle assembly which enables the hooking pile fabric manufacturer to make fabrics of modern style, with cut and uncut pile, and special configurations and dimensions. Krug Engineering Service of Los Angeles developed a hooking needle operating more or less on the electric drill principle. Tapestry and rugs are the major materials made on the hooking principle, but rugs are the most common products commercially sold to-day.

Tufted Pile Fabrics are the outgrowth of hand hooking as well as of the sewing machine. Contrary to weaving and knitting, where pile surface and backing is produced and interlaced simultaneously, tufted pile fabrics require a backing material of the cloth or burlap type to be fed into the machine. A sequence of needles punch loops through the backing. These loops may be cut, but in practically all cases a heavy backsizing is required to hold the stitched face yarns in place and prevent unravelling. This is more true for floor coverings and upholstery than for bathrobes or bedspreads.

The emergence of the tufting industry, as it is known to-day, required much research, both in machinery and products. Originally, hundreds of small manufacturers went into this business (as early as the late 1930's) and many of them produced inferior products. It was the aim of the majority of the early tufting producers to undersell rather than to improve the quality, and they gave the tufting industry a bad reputation. They frequently used pile yarns which looked rich in texture and fabric when new, but which proved inferior after short use. They hoped to make a quick profit on volume with a small investment in machinery, such as was formerly the case in the garment industry. It was not until these deficiencies were properly explored that tufted pile fabrics came into their own and proved their worth.

To-day, companies like Cobble Bros. and Supertufter in the United States, or the Tufting Machinery Ltd. in Hollingbank, England make machinery which is widely used. While these tufting machines in wide width are said to operate at a speed exceeding 400 stitches per minute, their efficiency is known to be below 50%, and sometimes as low as 25%. And, while many of the original manufacturers have fallen by the wayside, those with knowledge of good merchandising, good fabric construction, proper finishing processes and pride in their product have not only survived but, in many cases, have prospered.

Pattern attachments and other improvements were developed and, even though they can be considered in their infancy and have certain limitations, they have proven of some value. Professor Johnson of Sidney, Australia writes in the November 1956 issue of the *Textile Manufacturer* with regard to the future for tufted pile fabrics. In particular he concerns himself with the reproduction of Brussel and Wilton carpeting by warp printing. Limited types of wool and wool blend rugs and carpets made by tufting manufacturers to-day have gained considerable acceptance, although they are primarily an addition to rather than a replacement for the standard types of floor coverings. The rapid rise and acceptance of the tufting industry proves that there is just as much opportunity in the pile fabric division of the textile industry as in any other industry.

Non-Woven Pile Fabrics

Last but not least *Non-woven Fabrics* are those which are neither woven, knitted nor tufted but in which yarns or fibers are put together, either by adhesion on cementation to a backing, or by fermentation of sorts. This would be the ultimate in the manufacture of pile fabrics and the future will undoubtedly reveal many refinements in this process.

Flocked fabrics to-day are made primarily for the automotive trade by various manufacturers. Lea Fabrics Inc. of Newark, N. J. has been active in the non-woven pile fabric field for more than 25 years. Nap type fabrics are made on the principle of felt, and fabrics wherein the pile ends are inserted into liquid rubber and later cured have been developed, by different processes, in recent years.

L. Appleton of England describes his process for rubberized hair bonded with latex and vulcanized to a high elastic modulus. Barthul of Germany wrote a paper describing resin bonded fiber fleeces and Rahmer of Germany found a process for producing fiber fleeces of thermoplastic fibers by dielectric heat. An invention owned by Behr-Manning obtained patents wherein fibers of predetermined length are put through an electrostatic field and are adhered to a backing by thermostatic means.

COLLINS & AIKMAN'S CLOUD #9—A woven pile cloth of combined Dynel and Orlon, the fabric in this coat comes in ten colors.

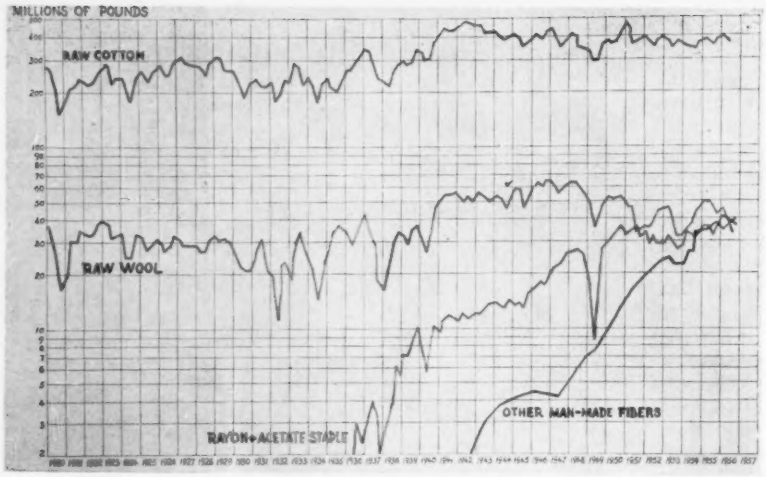
Ahier of France and Krull of Germany developed a machine making carpets of the chenille type where neither the chenille nor the carpet is woven but where the yarn is fed through heatable channels and is coordinated thereafter into a fabric, all in one process.

Hug of England uses fibers within an electrical field which are finally coated and adhered. The non-woven pile fabrics are still in their infancy, but they may be considered as one of the spheres of great future potential.

A comparison of these various types and methods of manufacturing pile fabrics certainly shows that recently there is a new trend towards competition and advancement. Just a few years ago, terry was only a woven cloth, but to-day the knitting industry also is getting a share of that business. While upholstery and velvets were traditionally woven pile fabrics, the knitting and tufting industries are getting a share in the sales of these products to-day. And, where floor coverings were either hand-made or woven, the tufting industry has become a stimulating addition and the non-woven manufacturers have made effective advances there. Industrial fabrics now are no longer just woven materials. Knitted and non-woven pile fabrics in that field have become accepted products.

There has also been some realization of the need for action in order to keep the pile fabric industry healthy and prosperous. It is faced with a particular challenge to-day because its products are in ever increasing demand and its possibilities practically limitless.

Nevertheless, many of the pile fabric manufacturers have the attitude that they are just an insignificant part of the textile industry. But those selling yarns and staple to the pile fabric industry know that



Courtesy Textile Organon

U. S. FIBER YARN CONSUMPTION PERTINENT TO PILE FABRICS

this is not so. Statistics show that about 10% of all cotton staple for yarns, more than 30% of all wool fiber and 20% of all rayon staple consumed in the United States in 1955 were used in the pile fabric industry.

No one man is able to keep abreast with all the progress and all the developments. If pile fabric mills, no matter how large and no matter how small, want to survive by remaining competitive, they today must have a direct source from which they can draw the information they need for their respective businesses. A large corporation can well afford a research and development department for this purpose. But it would not be healthy if they were to run all the smaller companies out of business by alone having such an advantage.

Therefore, the smaller companies probably ought to have a pool from which to draw their information by cooperatively supporting a consulting force serving as a development department to them. To avoid the intermingling of individual thoughts by such smaller companies, such a development force would adhere to secrecy, giving service on an ethical code equal to the one practiced by attorneys of good standing.

Commercial factors, who pull many of the smaller companies through financial difficulties, would most likely be wise to have such a service available under their own auspices, for the advantage of their own clients and the safeguarding of their own loans. The cost of such service would be small if they include it in the interest rate they charge.

Manufacturers of new man-made fibers who supply the pile fabric industry often contribute technical information to their customers. While they often do so in good faith, it has to be realized that they are not pile fabric manufacturers. It cannot be emphasized strongly enough that, no matter how complete their knowledge of the fiber, it cannot be properly determined by them alone what this fiber will do in a given pile fabric.

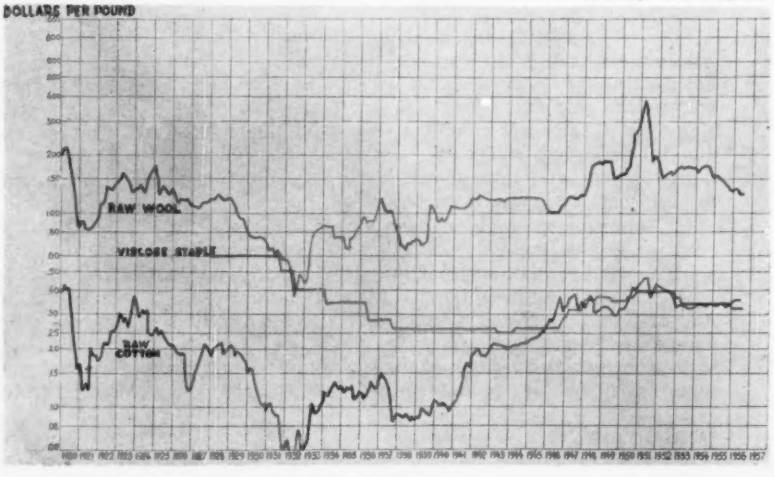
We should realize that textile fibers, plastics and rubber are fundamentally the same in that they consist of macromolecular systems and that their differentiation rests in the relative magnitude of the inter-molecular forces and the relative ease with which the chain system can be formed into a crystal lattice. The new fibers in pile fabrics must compete with wool, cotton and other natural fibers on their own merit. When the natural fiber requires resilience, warmth or permeation, the substitute man-made fiber chosen to replace it must be the one that comes closest to those qualities. In blends, some of the man-made fibers, especially true synthetics, have proven of great value. In this regard, pile fabrics should not only be made for style and ease of manufacture but also with the view towards the most satisfactory ways of cleaning the finished product. Those interested in laundering blended materials should read a report on the subject in the *Textile Research Journal* with a further view of the analysis of H. W. Best-Gordon who states that most fabrics of the future will—more likely than not—contain two or more fibers blended together.

Much good literature is available to those desiring to study the pros and cons of fibers used in pile fabrics. Those worried about soiling may well read the analysis of J. Compton and W. J. Hart in "Industrial Engineering". Those interested in static problems should study the analysis and charts compiled by Trinchieri of Italy with a listing of the proprietary static agents and also the papers from the Conference of the Institute of Physics at Bedford College in London, which discusses the static problems.

Those interested in fiber evaluation should study all the detailed literature and publication made available by the fiber manufacturers. Those interested in cellulose fiber differentiation should not overlook a very fine paper written by Dillitskaya and Belenky of Soviet Russia. Those interested in vinyl derivative fibers can gain much from studying the analysis of J. Alibert of France. One of the outstanding contributions for the evaluation of fibers has been made by Callaway Mills with their constantly supplemented volume called: The Synthetics Handbook. Those worried about crease resistance, abrasion resistance and flame proofing should study the literature available through the American Cyanamid Corp. ■

U. S. FIBER YARN PRICES PERTINENT TO PILE FABRICS

Courtesy Textile Organon



REPORT FROM JAPAN

Quota negotiations make little headway; both sides seem reluctant to compromise

By B. Mori

OSAKA—Quota negotiations for Japanese cotton cloth shipments to U. S. have bogged down. Negotiators are having difficulty translating principle of quotas (hailed so hopefully in Japan and U. S. few months ago) into specific and enforceable limitations on various types of cloth shipped by Japan to U. S. markets.

Meanwhile, a certain amount of strain is showing on both sides. Japanese are disappointed and irritated by recent recommendation of U. S. Tariff Commission for substantial increases in velveteen tariff. They showed their irritation in their Dec. 14 letter to President Eisenhower asking him to reject Commission's proposals.

Shortly after this letter was made public, a Japanese official in Washington hinted strongly that quota talks might collapse if velveteen tariffs are raised. The same official admitted that discussions between U. S. State Department and Japanese are aimed at creating quota agreement of three to five years' duration.

U. S. Industry Grows Restive—In U. S. it would seem that cotton industry leaders are having second thoughts about effectiveness of voluntary quotas. As significant symptom of continuing American disquiet over Japanese imports, statement on Dec. 14 by F. E. Grier, president of the American Cotton Manufacturers Institute was noted with uneasiness by Japanese textile leaders here. Grier called for a solution of Japanese import problem "reasonably and permanently." He also said significantly Japanese textiles are continuing to pour into American markets despite efforts of the Japanese to restrain volume of shipments.

Both Sides Seek Gains—As goodwill shows signs of evaporating, discussions between the two governments seem to be slowed down by statistical haggling. While U. S. government maintained that it was not "negotiating", but only using its good offices to help reach settlement acceptable to American and Japanese industries, Japanese side considered that they were up against U. S. Government itself, and took same attitude as they would toward formal treaty.

At first, Japanese attitude was apologetic and timid, reflecting distress that issue had ever grown to such proportions. Later, as U. S. "Government" attitude remained adamant and uncompromising on statistical details, Japanese reaction was one of protest that a "settlement" was being jammed down their throats—making their "voluntary" export quota system no different from an American import quota.

Velveteen Question Held Symptomatic—The Japanese were especially disappointed at the U. S. Government recommendation that velveteen shipments be cut to one million yards—compared with 7 million last year, a quota of 5 million this year, and a Japanese offer of 3 million for 1957. This was taken here as a double-slap, after the Tariff Commission's recommendation that the President raise velveteen duties. This entire velveteen situation was made subject of a specific negotiation by Japanese Ambassador at Washington.—This treatment perhaps exaggerates the case out of proportion to dollar amounts involved. But it indicates that the Japanese consider velveteen a capsule example of whole quota problem.

Production Rising—Production of viscose rayon staple was just under half a billion pounds in first nine months of 1956—a gain of 25% over the same period of 1955, setting new high for third quarter. It looks like 1956 total will be a little under 700-million-pound goal which had earlier been considered feasible. But that figure will be reached for fiscal year which ends March 31. The 1956 total is just about double 1953 figure and little more than double prewar high—a remarkable record of postwar recovery and growth.

Information reaching textile machinery manufacturers here indicates that Red China expects to have 7 million spindles installed by end of 1957, as compared with Japan's 8.8 million.

The Six Ixes

(Continued from Page 34)

"When we were children", Bill Ix says, "instead of going for Sunday walks in the park with our parents or rides in the family car as people do nowadays, we took walks through the mill. To us the rooms full of spinning, twisting, weaving and finishing machinery were fascinating places."

As the boys grew older they found jobs for themselves in the mill, at first during summer vacations and later as full-time workers. The eldest Ix son, Alex started as a full-time Blumenthal worker in 1912. By the time he enlisted in the Navy in 1917, he was a thoroughly seasoned millman. The twins, William and Frank soon followed Alex in joining the working staff at Blumenthal's. Charles was the next Ix to go into textiles by way of a job at the Shelton mill.

As Ed recalls it now, their parents did not urge the Ix boys to go to work in a textile mill. Frank and Catherine would have been just as happy if any of their sons had elected to go on to college and prepare themselves for careers in some other industry.

"But the pull of textiles was too strong on all of us," Ed Ix says now. "In my own case it looked for a while as if I would go to college and study law. Those were my plans in my last year of high, and mother and dad encouraged me in the idea of becoming a lawyer. But in the end, the attraction of the mill was too strong. I liked the work that went on there—the work I had shared in summer vacations from school. There was always something new and interesting in the variety of tasks that needed doing in a mill. I gave up my plan to be a lawyer and instead of entering college, I took a full-time job at the mill. I suppose it would have come to that sooner or later even if I had studied law. In the long run, I don't think I would have been able to resist the appeal which fabric making has always had for me."

A Business of Their Own

With five young sons all highly trained in textile manufacturing it is understandable that Frank Ix, even at the age of 52 and after three decades of employment at Blumenthal's, should want to set up a family weaving business. In his decision, he had the wholehearted encouragement of his wife. They were firmly of the opinion that it would be more advantageous for their boys to have their own weaving business. And they had a strong faith in their sons' ability to make good.

In those days, the growing womenswear manufacturing trades were seeking silk and more silk. Their business was booming as dress manufacturers worked to supply the insatiable demands of the newly emancipated women of America, enjoying postwar prosperity and freedom, for smarter dresses and more of them.

In and around the little towns of north New Jersey, the silk looms wove night and day to meet the hunger for silk dress goods. Established mills expanded tremendously while new mills, often incredibly small and lightly capitalized by today's standards, sprung up by the dozens overnight.

The new firm of Frank Ix & Sons was one of these new and small silk weaving outfits. Ix started with 16 Stafford looms with one weaver for every two looms (quills were changed by hand.) From the very beginning, the drive to grow was overwhelmingly strong in the Ix operation. Its growth, which was remarkably rapid, was achieved by the hardest kind of plain hard work by all five Ix brothers. In those early days, the Ix organization was too small and new to afford workers for every little job of the literally hundreds that had to be done to keep the company growing. As a result, the Ix brothers themselves did much of the day-to-day work.

Whether it was examining cloth, soaking silk, or loading pinboards with quills, the brothers never hesitated to turn their hands to whatever task urgently needed doing at the moment. Then, often as not, they would wash their hands and go into the office to post the books or make up the payroll, or run over to Manhattan to look for orders.

All these duties meant long hours for the brothers and they accepted them cheerfully. In those days, New Jersey mills ran two shifts—the first for 10 and the second for 12 hours. It was the practice of the Ix brothers to be on hand at seven in the morning when the day shift started and remain on the job until well after six. Then later in the evening before going to bed, they often dropped in at the mill to check how things were going on the night shift.

The Move to Charlottesville

By 1925, the original 16 looms had grown to 172 housed in two plants in North Bergen, N. J. By 1927, the Ix's were ready to move out of the cramped atmosphere of northern New Jersey and build a plant out in the country where there would be room to operate a really modern and freshly equipped mill. They chose Charlottesville, Va., and their new plant was equipped with 120 looms to start.

When the mill was ready to make cloth, the question debated in the Ix family councils was who would move down to Charlottesville to supervise the mill's operation. It was finally agreed that the job was one for either Frank or Bill. Neither was particularly anxious to go, although both, with their strong sense of family solidarity and responsibility, realized that it was their duty to go. They agreed to allow the choice between them to rest on the toss of a coin, the loser to take charge in Charlottesville for one year. Frank lost and he went to Charlottesville consoling himself with the thought that he would only have to be there for 12 months. Instead of a year, he stayed a lifetime, finding the Virginia town so much to his liking.

Growth During Difficult Times

By 1933, Ix added another new plant, this time at New Holland, Pa. not far from Lancaster, with William Ix as manager. With Bill Ix settled in Lancaster and Frank in Charlottesville, the five Ix brothers had arrived at a division or responsibilities in the management of the business which persisted for many years. Alex, as the eldest brother, handled the crucial job of finding customers for the company's products in the New York market. He lived in northern New Jersey and divided his time between the mills in North Bergen and the New York City fabric market. With him worked the two younger brothers, Charles and Edward.

The 1930's were a difficult time for mills that had got their start weaving silk and were then struggling to adjust themselves to the dislocations and hardships brought about by the general business depression and the decline of silk and the rise of rayon and acetate. The blight of hard times swept bleakly over the silk industry of northern New Jersey and Pennsylvania.

Many big silk weaving outfits, who had grown prosperous and well-known during the good days of the 'twenties floundered and stumbled and fell to pieces. Liquidations and bankruptcies were numerous.

In this harsh and depressing business climate, Frank Ix & Sons not only stayed alive but expanded. In the hard years between 1929 and 1940 the Ix brothers managed to double the capacity of their New Holland plant and to triple the looms operating at Charlottesville. How did they do it? We worked hard, they tell you modestly. People in the industry who know them well—customers, suppliers, fellow cloth weavers—say that hard work is meat and drink to the Ix brothers. They thrive on long hours, burdensome responsibilities, painstaking attention to a thousand and one details.

Frank Ix, Sr., who had retired from Blumenthal in 1925, served as president until 1940. In his later years, however, he functioned more as a wise counselor than an active participant. In his mild and whimsical way, he used to describe himself as the "oiler" of the company. By "oiler" father Ix meant one who supplied the ability to reconcile often sharply differing opinions among his five strong-minded and energetic sons.

Father Acts as "Oiler"

It was a measure of the deeply seasoned wisdom of Frank Ix, Sr. that he realized how vitally important it was for the prosperity of the family business to have someone able to act successfully as "oiler." He understood, as his sons came to understand in later years, that the ability to resolve differences amiably and stick together tightly through all difficulties was indispensable if the firm of Frank Ix & Sons was to endure and prosper.

Lacking this quality, the older Ix knew, all the drive, hard work and textile skill of his five sons could easily come to nothing. With this quality of cohesiveness, he sensed quite correctly, as time has shown, that the combined abilities of his five sons, plus their insatiable appetite for hard work, would virtually guarantee the continued prosperity of Frank Ix & Sons. That is why, in his relations with his sons, he could never emphasize enough the value of harmoniously working together, and never do enough to drive this idea deep into their minds.

Frank Ix, Sr. lived to see his gently insistent training in the value of harmonious cooperation among his sons pay rich rewards. He died last year at the age of 88 at a time when the firm of Frank Ix & Sons had grown to major stature among American textile organizations. Before he died he had the satisfaction of seeing among Ix workers not only his sons but grandsons. Today six of the 11 grandsons of Frank Ix are working in the business in capacities ranging from assistant sales manager to trainee in one of the mills. But no Ix is guaranteed a job in the Ix organization just by virtue of his name. It is family and company policy to encourage none of the grandsons of Frank Ix to seek a career in textiles or to take a job with the company. "If one of the younger Ix's", Ed says, "comes to his own decision that he wants to go into textiles, he can find employment with us as a trainee. From that moment on, he has to make his own way."

The fact that there are sons and grandsons of Frank Ix in the business has made the four Ix brothers particularly sensitive of the dangers of nepotism, and its potentially discouraging effects on those employees on a management level who are not Ix's. The Ix brothers

The eldest of the Ix brothers is remembered by all who knew him in the trade as a man of great energy and ability. He died in 1953.

point out that some of the most important people in the company are not members of the Ix family. The brothers are proud of the fact that these men have made rewarding careers working for Frank Ix & Sons.

Among these non-Ix's are Stephen Walser, vice president in charge of sales; Werner Hug in charge of styling and technical matters; Norman Alexander in charge of the company's substantial tricot operation; Lewis Kendrick in charge of scheduling production at all plants; Hubert Glancy, in charge of industrial engineering; Philip Lanciano, in charge of accounting and clerical work; W. H. Gainer, superintendent of the New Holland plant; Joel Fewell, superintendent of weaving and William Bickley, superintendent of knitting at Charlottesville; and Alex Ball, superintendent of the Lexington, N. C. plant.

Ed Ix Becomes President

From 1940 until his death in 1953 Alex Ix served as president largely concerning himself, in later years, with managing of the firm's marketing operations and its financial affairs. He was a man of outstanding energy and ability, and his brothers give him great credit for the steady forging ahead of Frank Ix & Sons. Ed Ix, the youngest brother, who is now 49 and has behind him 31 years with the company, worked closely with Alex in handling its marketing and financial affairs.

After Alex's death the brothers felt that Ed, by virtue of his experience and his demonstrated ability, was the logical choice to take over the presidency of the firm. Ed himself, however, has a different view. He says that the only reason he was chosen president was that none of the brothers wanted the job. He adds that it was always this way: as the youngest in the family he is accustomed to having thrust upon him the tasks which none of his elder brothers wanted.

Charles Ix, the next to youngest brother, is in charge of yarn purchasing with headquarters in the

IX PRODUCTS AND WORKERS ON DISPLAY—In a local celebration in Lancaster, this float showed some of the fabrics woven at the Ix New Holland mill.

Ix office in Union City, N. J. Charles also is chairman of the company's manufacturing committee made up of himself, Frank as manager of the Charlottesville plant and Bill, manager of the New Holland plant.

By teletype and telephone and by frequent personal meetings, the brothers keep in close touch with each other for quick and harmonious making of important decisions. Although they seldom meet formally to sit down around a table as a board of directors, their teletype and telephone communications amount to an almost continuous directorial session.

The Ix operation is carefully organized to function profitably in today's difficult textile market. Constant and lavish re-investment of earnings in new equipment keeps Ix plants unsurpassed in modernity. The main plant at Charlottesville, the largest of the Ix mills, with 1100 looms is generally admitted to be one of the finest weaving plants in the country.

Flexibility, Open-Mindedness are Valued

In the rough-and-tough, bitterly competitive, mercurial textile industry of today, a fabric manufacturer cannot survive without good equipment, the Ix brothers believe. But survival is more than a matter of good equipment, the brothers understand fully. An open-minded approach to current conditions, an ability to shift quickly from one fabric to another in order to produce on short notice what the market wants are also necessary for profitable operation. The Ix organization has this open-mindedness and flexibility.

"We steer clear of rigid notions of what are good fabrics and what people in the market should buy," Ed Ix says. "We try to find out what they *want* and we produce the wanted fabrics as quickly as we can." What such an approach means in terms of flexibility is pointed out by Bill Ix when he says that in the past 12 months probably more than 100 different constructions of cloth have been woven in the New Holland plant alone with its 456 looms.

The company's flexibility and versatility has led Ix into production of virtually all types of man-made fabrics and fabrics combining man-made with natural fibers. Originally weavers of silks, Ix began running rayon in the late 'twenties. From rayon the company went on to acetate and then to nylon, and later to the newer fibers. An example of flexibility of the Ix organization came a few months ago when for the first time in years it appeared that there was a profitable demand for silk and silk mixtures. At the New Holland mill, according to Bill Ix, it had been ten years since the company had woven a pound of silk.

But when the orders came in from New York to produce silk again, Bill Ix and his fellow workers looked into their memories and their written records. In no time they were back weaving fine quality silk cloth again. With this kind of ready flexibility of operation, the Ix organization is confident that it will be able to face the current and future rigors of the textile industry without any faltering of its steady earning of profits and orderly, reasonable growth.

The open-mindedness of the Ix brothers, their alertness to new things in textiles and the superb modernity of their plants have made them extremely popular with innovators in textiles. Yarn producers especially have availed themselves of the Ix willingness to experiment with new, untried and often excruciatingly difficult textile materials. Manufacturers of new equipment have also found the Ix brothers eager to test new machinery under mill condition.

When nylon was in its early stages of development under a heavy blanket of secrecy, Du Pont, for example, chose the Ix New Holland plant as one of the mills relied on to test the textile processing properties of its new synthetic material.

Du Pont sent one of its textile technicians to New Holland with a small package of the new polyamide in filament form. So great was Du Pont's worries about possible inadvertent disclosure of its new fiber, that he was instructed not to stay at any Lancaster hotel for fear his goings and comings between Lancaster and New Holland might arouse curiosity among any textile people who might chance to see him in the hotel. With the help of Bill Ix, he found room and board at a private home in New Holland during the days he tried out the mysterious new material on Ix's spindles and looms. For further protection of the secret of the new fiber, two looms on which it was woven were hidden from the view of mill workers.

To make your plants the testing ground for new things is sometimes inconvenient and burdensome. But the Ix brothers cheerfully accept these vexations as part of the price they are willing to pay to be among the first to know about new fibers and yarns, and among the first to benefit from the high profit potential in their commercial use.

Growth Has Been Impressive

This year, the Ix organization will mark the 38th anniversary of its first venture into fabric manufacturing. During those fast-moving years, the growth of the company has been nothing short of astonishing: from 17 looms to more than 2,000 looms, 46 tricot machines and some 80,000 throwing spindles; from one little plant in North Bergen to four splendidly equipped mills in three states; in addition to Charlottesville and New Holland there are plants in Lexington and Cornelius, N. C. During these years the company has moved from an unknown newcomer to a shining reputation for integrity of its products and integrity in its dealings with the textile trade.

It has been a remarkable story of "six Ix's"; of a gifted and hard-working father and his five gifted and hard-working sons. Such six-way combinations of ability, energy and level-headed capacity for working together are rare in the world. The fact that they were combined in such rich measure in the Ix family is what makes the Ix story a chapter of textile history worth telling.

"As long as you five boys stick together, "Catherine Ix, used to tell her sons when they and their business were much younger, "It will take one more than five to lick you." Many in the industry who have watched with admiration the growth of the Ix company, believe that Catherine Ix underestimated the combined strength of her boys. There's nothing in textiles today that can beat them, these friends of the Ix firm say. ■

NEW BOOKS

Textile Chemistry

The aim of this book is to simplify study of textile processing, identification, and testing techniques. The book is largely devoted to wool. The publisher believes that the book will serve to train wool technologists and students and that it will be of value to textile workers in discussing standard procedures, fiber identification, analysis of fiber mixtures and agents used in processing operations. *Practical Textile Chemistry by J. W. Bell. Chemical Publishing Co. 259 pages, index, illustrations, 5½ by 9", hard covers, $4.75.*

Chemistry of Finishing

This book offers initially an account of various dyes and other coloring materials. It discusses the methods such colors are applied and removed by stripping. There follows an account of machines used in dyeing, and of instrumentation and control methods. Additional chapters give useful information on the theory of dyeing; on the coloring of non-textile substances such as food, leather, plastics, fur, paints, ink. All in all, a useful book for the working dyer. *Basic Chemistry of Textile Colouring and Finishing by Cockett and Hilton. Philosophical Library. 191 pages; hard covers; 5½ by 9", $6.*

Basics of Fiber Chemistry

A companion volume to the same authors' "Basic Chemistry of Textile Colouring and Finishing," the present book, coupled with the former volume, provides a complete theoretical course in basic textile chemistry for students and workers in the textiles and finishing fields. *Basic Chemistry of Textile Preparation by Cockett & Hilton. Philosophical Library. 197 pages, 5½ by 9", hard covers, $6.*

Resin Chemistry Explained

Written from the view point of the organic chemist, this book is said by the publisher to be the only detailed survey in English to cover both the chemistry of present-day phenolic resins and the chemistry of related products available as more or less pure compounds. Each major type of reaction of phenols with aldehydes and ketones is considered individually. Available data are presented fully and systematically. Of value to the researcher are the many tables showing structure, melting point, etc. The book is undoubtedly a valuable contribution to the knowledge of phenolic resins and their uses. *The Chemistry of Phenolic Resins by R. W. Martin. John Wiley & Sons. 208 pages, index, hard covers, 6 by 9½", $9.50.*

U. S. MAN-MADE FIBER PRICES

This schedule lists the prices of yarns, staple and tow as reported by the producers in November, 1956. All prices are given as subject to change without notice.

RAYON FILAMENT YARN

American Bemberg

Current Prices

Regular Production Reel Spun Yarn

Den/Fil	No Twist Skeins	Twisted* Skeins & Cones	8½ Turns	High Twist Skeins & Cones 12 or 15 Turns	18 Turns
40/30	$1.49	$1.95	....	....	$2.08
50/36	1.24	1.50	....	....	1.72
65/45	1.14	1.30	....	$1.53	1.58
75/60**	1.04	1.18	....	1.41	$1.41	1.49
100/74**	.95	1.08	....	1.33	1.33	1.44
125/60	.94	1.05	$1.09	....	....	....
150/120	.93	1.02	1.12	1.27	....	....
300/225	....	.95	....	....	1.08	....

* Twisted includes twists up to 6 turns on 40 and 50 denier, and up to 5 turns on heavier deniers.
** Spun Dyed Black 15¢ per lb. extra.

"44" HH Spool Spun Yarn

Den/Fil	No Twist Tubes	No Twist Beams	5 Turn Beams	5 Turn Cones	12 Turn Beams	12 Turn Skeins & Cones	15 Turn Skeins & Cones
40/30	$1.35	$1.35	....	....	....	....	....
50/36	1.00	1.00	....	....	....	....	....
65/45	1.05	....	....	....	....	$1.42	....
75/45**	.97	.97	$1.08	$1.08	$1.31	1.31	$1.39
75/54	.97	.97	1.08	1.08	....	....	....
100/60**	.89	.89	1.03	1.03	1.23	1.23	1.23
125/60	.84	.84	.99	.99	....	....	....
150/90***	.77	.77	.81	.81	....	1.15	1.15
150/120	.81	....	....	.93	....	....	....

** Bemberg Solution Dyed yarns are spun in 75/45 and 100/60 only. Black 15¢ per lb. extra; all other colors 35¢ per lb. extra.
*** Spun Dyed Black 15¢ per lb. extra.

Nub-Lite (Short Nubbi)

Code	Den/Fil	2½ Twist Cones	5 Twist Cones
1516	150/90	....	$1.35
1517*	150/90	....	1.35
2000	200/120	....	.96
2025**	200/120	....	.96
3000	300/180	$1.00	....
4000	400/224	1.00	....
6000	600/360	.98	....
8000	800/450	.98	....

* Code 1517 can be run in warp or filling.
** Code 2025-Softer than 2000.

CUPIONI
Long Type A

Den/Fil	No Twist Skeins	2½ Twist Cones	3½ Twist Cones	5 Twist Cones
150/135	....	....	$1.20	....
275/135	....	....	1.05	....
450/372	....	$1.05	....	....
600/372	....	1.02	....	....
900/372	....	1.02	....	....
1250/372	....	1.02	....	....
2500/744	....	1.02	....	....

Type B

50/30	$1.34	....	....	$2.09
70/45	1.24	....	1.59	....
100/60	....	....	1.43	....
150/90	....	....	1.20	....
275/135	....	....	1.05	....
450/200	....	1.05	....	....
600/360	....	1.02	....	....

SPUN DYED BLACK 35¢ PER LB. EXTRA.
This applies to 150 and 275 denier only.

Type C

150/112	....	....	....	1.20
275/180	....	....	....	1.05
450/180	....	....	....	1.05
600/225	....	....	....	1.02
900/372	....	1.02	....	....
1250/372	....	1.02	....	....
2500/744	....	1.02	....	....

Modified Type C

100/60	....	....	....	1.43
150/120	....	....	....	1.25

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight allowed to Memphis, Tennessee. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold f.o.b. delivery point.

American Enka Corp.

Current Prices
Effective December 4, 1956
Standard Quality Yarns

Standard Quality Rayon Yarns

A. Natural

Den./Fil.	Luster	Turns	Weaving Cones	Beams	Skeins Long	Skeins Short	Cakes	Knitting Cones
50/18	E	5 S						1.56
75/10	B	3 S&Z					1.08	
75/18	E	4 S						1.22
75/30	B	2.5,4S&Z	1.17	1.17			1.08	1.17
75/30	B	8 S	1.22			1.37		1.22
75/45	P,E	2.5, 4,5S&Z	1.17	1.17	1.23	1.37	1.08	1.17
75/60	B,P	3,4 Z	1.22				1.10	1.22
100/14	B,P	3 S&Z				1.12	.96	
100/40	B,E	12 S						1.27
100/40	B,P,E	4,5 S&Z					.96	1.04
100/40	B	6 S	1.10					
100/40,60	B,P	2.5,4S&Z	1.04	1.04	1.08	1.12	.96	1.04
100/60	E	2.5 S	1.06	1.06			.98	
125/40	E	3 Z						.96
150/40	B,P,E	2.1,3S&Z	.91	.91	.94	.99	.86	.90
150/40	B,E	5 S&Z	.91		.94	.99	.86	
150/40	B,E	8 S&Z	.97		1.00	1.05		
150/40	B,P	10 S&Z	1.03	1.03				
150/90	B,E	2.1 S&Z	.92	.92			.87	
200/40	P	3 Z						.82
200/40	B,P	8 S				.95		
250/60	P,E	2.4 Z						.75
300/50	B,E	3 S	.73	.73				
300/60,120	B,P,E	2.1 S&Z	.73	.73		.76	.71	.73
300/60	B	3.5 S	.73	.73		.76	.71	
300/60	B	4.3 S	.76	.76			.74	
300/60	B	7 S	.83					
300/40,120 H.T.	B	2.5, 3,4S	.75	.75				
450/80	B	3 S	.70	.70		.72	.68	
600/80,120	B,E	3 S	.69	.69			.67	
900/120	B	3.4 S	.68				.66	
900/120 H.T.	B	3.6 S	.70				.68	

"Jetspun" Colored Yarns

Den./Fil.	Tenacity	Turns	Weaving Cones	Beams*	Cakes	Colors
100/40	Regular	2.5S	1.39	1.39		All
150/40	Regular	2.1S	1.26	1.26		All
200/40	Regular	8.3S	1.27			All
450/80	Regular	3.0S	1.05			All
300/40	High	3.4S	1.10	1.10		All
600/80	High	3.4S	1.06			All
900/120	High	3.4S	1.05	1.05		All

Registered trade mark of American Enka solution dyed rayon yarn.
* Single color.

American Viscose Corp.

Effective December 14, 1956

Graded Yarns

Denier	Filament	Type	Short Skeins	Long Skeins	All Cones Beams Tubes	Cakes
50	20	Bright & Dull	$	$1.59	$1.56	$1.45
60	10	Bright	....	....	1.41	1.30
75	10-30	Bright	1.24	1.20	1.17	1.08
75	30	Dull	....	....	1.17	1.08
100	14-40	Bright	1.12	1.07	1.04	.96
100	60	Dull	....	....	1.06	.98
150	24-40-60	Bright & Semi-Dull	.99	.94	.91	.86
150	40	Dull	....	....	.91	.86
150	90	Dull	....	....	.92	.87
200	10-44	Bright	.90	.85	.82	.78
250	60	Semi-Dull & Dull	.82	.78	.75	.73
300	44	Bright & Dull	.79	.76	.73	.71
300	234	Dull	....	....	.75	.73
450	100	Bright	....	.72	.70	.68
600	100	Bright	....	.71	.69	.67
900	60-100-150	Bright	....	.70	.68	.66
1200	75	Bright	....	.67	.65	....
2700	150	Bright	....	.70	.68	....

Extra Turns Per Inch

75	30	Bright 6-Turns	$1.36	$1.32	$1.29	$ ....
100	40	Bright 6-Turns	1.24	1.19	1.16	1.08
150	40	Bright 6-Turns	1.09	1.04	1.01	.96
300	15	Bright 5-Turns	....	....	.78	....
300	44	Bright 6-Turns	....	.86	.83	.81
600	30	Bright 5-Turns	....	.76	.74	.72

Rayflex Yarns

150	60	Rayflex	$	$	$ .94	$ .89
300	120	Rayflex	....	....	.75	.73
450	120	Rayflex	....	....	.72	.70
600	234	Rayflex	....	....	.71	.69
900	350	Rayflex	....	.72	.70	.68

Textile News Briefs

New Firth Company Formed

J. Floyd Smith has been appointed assistant to Harold Wadely, president of Firth Industries, Inc. He will be in charge of marketing and selling the products of the new corporation, a wholly owned subsidiary of Firth Carpet Co. Firth Industries has been established to engage in production and distribution of a variety of products in the textile field.

Plastics Booklet

A booklet has been published by Engineered Plastics, Inc. describing how the company produces plastics products for the textile and other industries. The booklet contains many illustrations showing the various steps by which the company manufactures a broad range of precision equipment from variety of plastics. Copies may be had by writing to the company at Gibsonville, N. C.

Nylon Tire Price Reduction

A reduction in nylon tire prices, effective January 1, was announced in November by Goodyear Tire & Rubber Co. The reductions will vary as to types and sizes.

Solvay Water Bulletin

Solvay Process Division, Allied Chemical & Dye Corp. has revised its bulletin entitled "Water Analysis." This 100 page booklet includes an analysis of various types of waters, numerous tables of analytic data, conversion factors and turbidimetric and color standards. Free copies are available from this company at 61 Broadway, New York 6, N. Y.

Brochure on New Fabrics

Fabric manufacturers and converters interested in a brochure illustrating spring and summer fabrics woven with all acetate, Arnel triacetate, or these fibers blended with other man-made or natural fibers, may write to Celanese Corp. of America, 180 Madison Ave. N.Y.C.

New Foxboro Shop

The Foxboro Co., Foxboro, Mass., has opened an instrument service shop at 3232 Roswell Road, Atlanta, Ga., for the convenience of instrument users in Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina and parts of Tennessee. Maynard S. Batchelder is shop manager. Initially, the shop will handle only emergency repair work on Foxboro instruments.

Thick and Thin Yarns

150	40-90	Bright & Dull	$	$	$1.15	$ ....
200	75	Bright & Dull	....	....	1.05	....
300	120	Bright & Dull	....	....	.95	....
450	100	Bright & Dull	....	....	.92	....
490	120	Bright & Dull	....	....	.95	....
900	350	Dull	....	....	1.00	....
920	120	Bright & Dull	....	....	1.00	....

Colorspun Yarns

Currently producing regular and high tenacity at premiums at $.35 per pound.

Viscose Filament Yarns

The following material deposit charges are required:

Metal Section Beams	$170.00 each
Wooden Section Beams	55.00 each
Wooden Section Beam Crates	30.00 each
Metal Section Beam Racks	75.00 each
Metal Tricot Spools—14" flange	30.00 each
21" flange	60.00 each
32" flange	150.00 each
Metal Tricot Spool Racks—14" flange	135.00 each
21" flange	100.00 each
32" flange	75.00 each
Wooden Tricot Spool Crates	20.00 each
Cloth Cake Covers	.05 each

Same to be credited upon return in good condition—freight collect.
Terms: Net 30 days.

Celanese Corp. of America

Current Prices

Effective December 14, 1956

Den. Fil. Twist #49 and #14 Production		Beams	Cones	Cakes	Non Shrunk Tubes
75/30/3	Bright	....	$1.11	$1.03	....
100/40/2Z	Bright	$.96	....	....	....
100/40/3	Bright	98	.96	.91	....
100/40/5	Bright	....	1.02	.97	....
100/60/3	Bright	....	.97	.92	....
150/40/3	Bright	.94	.92	....	....
125/40/2Z	Bright	.89	.85	.80	....
150/40/2Z	Bright	.87	....	....	....
150/40/5	Bright	....	.91	.88	....
150/40/8	Bright	....	.97	.92	....
150/40/0	Bright (Non Shrunk)	....	.71	....	....
300/50/3	Bright	.69	.68	.66	....
300/50/0	Bright (Non Shrunk)	....	.60	....	....
#20 Production					
150/40/3	Bright	.82	.78	.73	$.72
150/40/0	Bright (Non Shrunk)	....	.66	....	....
150/40/2Z	Bright	.82	....	....	....
300/50/3	Bright	.69	.68	.66	....
300/50/0	Bright (Non Shrunk)	....	.60	....	....
#20 Production					
100/40/3	Dull	....	.91	.86	....
100/60/2Z	Dull	.95	....	....	....
100/60/0	Dull	....	.88	....	....
100/60/5	Dull	.99	.97	.92	....
150/40/3	Dull	.82	.78	.73	.72
150/40/0	Dull (Non Shrunk)	....	.66	....	....
150/90/3	Dull	....	.85	.80	....
250/60/0	Dull (Non Shrunk)	....	.67	....	....
250/80/3	Dull	....	.75	....	.70
#52 Thick & Thin Rayon					
150/60/3	Bright	....	1.10	....	....
450/120/3	Bright	....	.89	....	....

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Effective with shipments December 12, 1956

Bright and Dull

Den.	Fil.	Turns/ Inch Up to		(A) Cones, Beams, Tubes	Skeins	Cakes
40	20	3	Textile "Cordura"*	$1.90	$1.90	$1.85
50	20	3		1.63	1.63	....
50	20	3	Textile "Cordura"	1.65	1.65	1.60
50	35	3	Textile "Cordura"	1.70	1.70	1.65
75	10	3		1.17	1.20	1.08
75	15	3		1.17	1.20	1.08
75	30	3		1.17	1.20	1.08
100	15	3		1.04	1.07	.96
100	40	3		1.04	1.07	.96
100	60	3	Bright	1.04	1.07	.96
100	60	3	Dull	1.06	1.09	.98
125	50	3		.96	.98	.90
150	40	3		.91	.92	.86
150	60	3		.91	....	....
150	60	3	Textile "Cordura"	.92	.93	.87
150	90	3	Dull	.92	.93	.87
150	100	3	Dull	.92	.93	.87
200	35	3		.82	.84	.78
300	20	3		.73	.76	.71
300	50	3.5		.73	.76	.71
300	120	3	Textile "Cordura"	.74	.77	.72
450	72	3		.70	.72	.68
600	96	3		.69	.70	.67
600	240	3	Textile "Cordura"	.70	.72	.68
900	50	3		.68	.70	.66
900	144	3		.68	.70	.66
1165	480	3	Textile "Cordura"	.68	.68	.65
1800	100	3		.68	....	....
2700	150	3		.68	.70	....
5400	300	3		.75	....	....

Thick and Thin

100	40	3	#7	1.38		1.38
150	90	3	#7	1.15	1.16	1.15
150	90	3	#19	1.15	1.16	1.15
200	80	3	#7	1.05	1.06	1.05
200	90	3	#19	1.05	1.06	1.05
450	100	3	#7	.89	.90	.89
1100	240	3	#50	1.32		1.32
2200	480	3	#50	1.14		1.14

Fiber E

300	50	2½	.88
900	50	2½	.83
900	90	2½	.83
2700	150	2½	.88
2700	270	2½	.88
5400	540	2½	.88

(A) 2¢/lb. additional for cones less than 3# and tubes less than 2#.
Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective December 21, 1956

Denier	Filament	Turns per In.	Type	2.8 Lb Cones	4.4 Lb Cones	Beams	2.2 Lb Tubes	4.4 Lb Tubes
100	40	2.5 "S"	Bright	1.04		1.04		
150	40	2.5 "S"	Bright	.91		.91		
150	40	2.5 "S"	Luster #4	.91		.91		
150	40	2.5 "S"	Bright intermediate strength	.92				
200	20	2.5 "S"	Bright	.82				
200	40	2.5 "S"	Bright	.82				
300	44	2.5 "S"	Bright	.73		.73		
300	80	2.5 "S"	Bright	.73		.73		
300	80	2.5 "S"	Luster #4	.73		.73		
300	80	2.5 "S"	Bright extra strong	.75		.75		
450	60	2.0 "S"	Bright		.70	.70		
600	90	1.5 "S"	Bright		.69	.69	.69	.69
900	50	2.0 "S"	Bright		.68	.68	.68	.68
900	150	1.5 "S"	Bright		.68	.68	.68	.68

Luster #4 is semi-dull.

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

North American Rayon Corp.

Current Prices

First Quality Yarns	Den./Fil	Twist	Cones: Knitting*, Jacquard and Velvet Cones	Cones: No Twist Knitting Cones	Cones: Beams, Tubes** and Weaving Cones	Untreated Cakes
	75/30	3.5			$1.12	$1.03
	75/30	7			1.25	
	75/30	15			1.32	
Normal	75/30	20			1.35	
Strength Yarns	100/40/60 Brt.	3.5			.99	.91
NARCO	100/40/60	12			1.17	
	125/52/60	3	$.91		.91	.85
	125/52/60	10			1.08	
	135/52	3			.90	
	150/42	3	.85		.86	.81
	150/42	0		$.66		
	150/60	3			.86	
	150/75	3			.86	
	300/75	3	.70		.70	
	300/75	0		.60		
	300/75	6			.80	
	600/98	3	.66		.66	
	900/46	2.5	.65		.65	
	1800/92	2.5	.65		.65	
Semi-High Strength Yarns	300/75	3			.71	
Hi-NARCO	300/75	6			.81	

* Oiled Cones .01 per pound extra for Graded Yarns only.

** 1 lb. tubes $.02 per pound extra for Graded Yarns only.

Terms: Net 30 days f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b. delivery point.

RAYON HIGH TENACITY YARN and FABRIC

American Enka Corp.

Effective November 1, 1956

Tempra (High Tenacity)

Denier	Elongation	Beams & Cones
1100/480	Low	.59
1230/480	High	.59
1650/720	Low	.55
1820/720	High	.55
2200/960	High & Low	.55

Suprenka (Extra High Tenacity)

1650/720	Low	.58
1900/720	High	.58
2200/960	Low	.57

* Beams Only.

Terms: Net 30 days, f.o.b. Enka, North Carolina, or Lowland Tennessee; minimum freight allowed to first destination east of the Mississippi River.

P.T.I. to Expand

Philadelphia Textile Institute Foundation has purchased a four-acre tract across from the P.T.I. campus in Philadelphia, it was announced by Everett L. Kent, Foundation president and board chairman of Kent Manufacturing Co., Clifton Heights, Pa. The plot will permit expansion of the college's campus facilities.

Personnel Changes

Dr. J. D. Fitzpatrick has been named manager of the newly created research section of Emery Industries, Inc. **Joseph Z. Sack** has been appointed to the south central sales territory.

John H. Barrows has been assigned to the New York district sales office of The Chemstrand Corp. **Albert W. Metzger** joined the company as Acrilan advertising coordinator. **Arthur Fay** has been added to the merchandising department and **William A. Norman** has been appointed Canadian technical sales service representative.

G. Milton Hutchinson has been appointed to represent the Lestershire Spool Division of National Vulcanized Fibre Co., in the New England area.

Michael Poster has been appointed sales representative in the New York office of Kenyon Piece Dye Works.

Edmund M. Buras has joined the staff of Harris Research Laboratories, Inc., research consultants to the textile and allied chemical industries, and will supervise research on protein fiber developments.

E. L. Rodgers has been appointed by Emkay Chemical Co. to handle technical sales in Georgia and Alabama.

Robert G. Thomas has been appointed manager of the textile chemicals department of Rohm & Haas Co., succeeding W. J. Thackston, Jr.

Clarence B. Moss, sales representative for Synthane Corp. has moved his headquarters to 7400 Sheffield Dr., West Hills, Knoxville 19, Tenn.

Edward J. Baxter has joined Dexter Chemical Corp. as technical sales representative for textile chemicals in Virginia and North Carolina.

Dr. D. I. Randall has been named product line manager for vat colors in the dyestuff and chemical division of General Aniline & Film Corp.

American Viscose Corp.

Effective November 1, 1956
Revised November 14, 1956

Super Rayflex

Denier	Filament	Twist	Beams	Cones
1100	490	0	$.63	$.63
1100	490	4.1Z	.63	....
1650	980	0	.58	.58
1650	980	4.1Z	.58	....
2200	980	0	.57	.57

Tire Yarn

1100	490	2.5Z	.59	....
1650	980	0	.55	.55
1650	980	3.2Z-3.6Z	.55	....
2200	980	0	.55	.55

High Strength

1150	490	2.5Z	.59	.59
1230	490	3.6Z	.59	.59
1650	980	3.5Z	.55	.55
1875	980	3.6Z	.55	.55

Super Rayflex, Tire Yarn and High Strength yarns are sold "Not Guaranteed for Dyeing."

Tire Fabric

	Tire Yarn	Super Rayflex
1100/490/2	$.69	$.73
2200/980/2	.635	.655

Above prices based on 80% minimum Carcass, 15% maximum Top Ply, 5% maximum Breaker.
1650/980/2
* Production Factor

525	Open	Carcass	$.635	$.665
300	490	Top Ply	.645	.675
115	275**	Breaker	.67	.70

* Determined by dividing total ends by picks.
** Orders limited to 5% of total 1650 Fabric booked for any given period.

The following deposit charges are made on invoices:

Beams	$55.00 each
Crates (Metal)	75.00 each
Fabric Shell Rolls	3.50 each

Same to be credited upon return in good condition—freight collect
Terms: Net 30 days.

Celanese Corporation of America

Effective December 27, 1955
Supersedes September 12, 1955

Fortisan Yarn Prices

Denier	Packages	Natural	Black
30/2.5/40	2 lb. Cones	$3.00 lb.	$3.35 lb.
60/2.5/80	4 " "	2.40 "	2.75 "
90/2.5/120	4 " "	2.25 "	2.60 "
120/2.5/160	4 " "	2.05 "	2.40 "
150/2.5/180	4 " "	1.95 "	2.30 "
270/2.5/360	4 " "	1.85 "	2.20 "
300/2.5/360	4 " "	1.85 "	2.20 "
60/2.5/80 Olive Green—Spun Dyed—OG106		4 lb. Cones	3.50 lb.

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U. S. A. east of the Mississippi River.
Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

Fortisan-36 Rayon Yarn
Bright

Denier and Filament	Twist	4# cones	8# cones	Tubes	Beams
270/280	0.8Z	$2.30			
300/280	0.8Z	$2.05			
400/400	0.8Z	$1.75			$1.70
400/400	0			$1.75	
800/800	0.8Z	$1.25	$1.25		$1.20
800/800	0			$1.25	
1600/1600	0.8Z	$1.15	$1.15		$1.10
1600/1600	0			$1.15	

Terms: Net 30 days. Shipments prepaid to any destination in U. S. A. East of the Mississippi River. Shipments West of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.
Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective with shipments October 29, 1956

"Super Cordura"*
(all packages)

1100	480	2	$.63
1250	480	2	.63
1650	720	2	.58
1900	720	2	.58
2200	960	2	.57
2450	960	2	.57

Beams containing ends of direct dyed yarn $3.30 per end extra.
Terms: Net 30 days.
Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.
* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective November 1, 1956

Unbleached Bright High Tenacity Yarns

SINGLE END BEAMS AND CONES:

Den.	Fil.	Turns Per In.	4.4 Lb. Cones	Beams	2.2 Lb. Tubes	4.4 Lb. Tubes
1100	480	1.5 "Z"	.59	.59	.59	.59
1650	720	1.5 "Z"	.55		.55	.55
2200	1000	1.5 "Z"	.55	.55	.55	.55
3300	1440	1.5 "Z"	.55	.55	.55	.55
4400	2000	1.5 "Z"	.55	.55	.55	.55

"Above Prices apply to Type 100. Type 200 Tyron Prices are 3¢ more."
Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.
Prices are subject to change without notice.

North American Rayon Corp.

High-Strength Yarns—SUPER-NARCO		Twist	Cones	Beams
1650	720	3Z		$.55
1850	720	3Z	$.55	
Super High Strength Yarns—				
1650	720	1.5Z	.58	.58

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b delivery point.

ACETATE FILAMENT YARN

American Viscose Corp.

Current Prices
Effective December 20, 1955

Bright and Dull
* Intermediate Twist

Denier & Filaments	Cones & 4-6 Lb. Tubes	Twister Tubes	Warps	Spinning Cones	Twist Warps
55/14	$.99	$.97	$1.00	$.93	$.94
75/20	.95	.93	.96	.89	.90
100/28	.91	.89	.92	.85	.86
120/32	.82	.80	.83	.76	.77
150/41	.74	.73	.75	.69	.70
200/54	.70	.68	.71	.66	.67
300/80	.66	.64	.67	.62	.63

* Standard Twist 2¢ additional.
Terms: net 30 days.

Celanese Corp. of America

Current Prices
Effective December 19, 1955

Bright and Dull

	Intermediate Twist			Spinning Twist		
Denier and Filaments	4 & 6-Lb Cones	Beams	4 & 6-TM Tubes	4-Pound Cheeses	Cones	Beams	O Twist Tubes
45/13	$1.12	$1.13	$	$	$	$1.07	$ ....
55/15	.99	1.00	....	....	.93	.94	.875
75/20	.95	.96	.93	....	.89	.90	.79
75/50	.97	.98	.95	....	....	....	.84
100/26-40	.91	.92	.89	....	.85	.86	.77
120/40	.82	.83	.81	....	.76	.77	....
150/40	.74	.75	.74	.74	.69	.70	.66
200/52	.70	.71	.70	....	.66	.67	....
300/80	66	.67	.66	....	.62	.63	.60
450/120	.64	.65	.64	....	.60	.61	....
600/160	.62	.63	.62	....	....	....	....
900/80-240	.60	.61	.60	....	....	....	.58

3 to 5 Turns on Cones or Beams.... $.02 Additional
150 Denier 12 TM Tubes..... .73
55/0/15Dull Tricot Beams..... .935
2-Pound Cheeses ..... .01 Less Than 4-Pound Cheeses
2-BU and 4-BU Tubes ..... Same Price as 4 and 6-Lb. Cones

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.
Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

Celaperm Filament Yarn Prices

	Intermediate Twist		Spinning Twist	
Denier and Filaments	4 & 6-Lb. Cones	Beams	Cones	Beams
55/15	$1.37	$1.38	$1.31	$1.32
75/20	1.34	1.35	1.28	1.29
100/26	1.28	1.29	1.22	1.23
120/40	1.19	1.20	1.13	1.14
150/40	1.11	1.12	1.06	1.07
200/52	1.05	1.06	1.01	1.02
300/80	1.01	1.02	.97	.98
450/120	.99	1.00	.95	.96
600/160	.97	.98	....	....
900/80	.94		....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Effective March 11, 1955

Dr. Edward A. Murray has become director of instruction in the School of Textiles at North Carolina State College.

Dr. Eugene Allen has been appointed to American Cyanamid Co. to supervise dye application research and preliminary evaluation of new products.

A. L. Ruddock

Amos L. Ruddock has been appointed sales manager of the recently formed textile fibers department of Dow Chemical Co., succeeding G. J. Williams. He will supervise activities in connection with the company's new textile fiber, Zefran.

James G. Clifford has joined William Heller, Inc. as manager of the company's knitting mills, Woonsocket, R. I. **Milton C. Orbach** has joined the company to direct sales and styling efforts in outerwear fabrics.

Dr. C. Scott Althouse has been elected chairman of the board of Althouse Chemical Co., Reading, Pa. He will be succeeded in his former post of president by **Howard F. Bjork.**

Albert G. Ruff, Jr. has been appointed manufacturing superintendent at American Viscose Corp.'s Marcus Hook, Pa., plant.

Ralph Gossett and Co. has recently been appointed southern representative for Cosa Corp. of New York City, M. J. McHale Co. of Scranton, Pa., John W. Collier Co., Inc. of Providence, R. I., and Standard Card Clothing Co. of Stafford Springs, Conn.

Deaths

Professor Milton Hindle, faculty member at Lowell Technological Institute since 1930, died November 5 on his 60th birthday.

Hugh Christison, charter member and former national vice president of American Association of Textile Chemists and Colorists, died November 5, at the age of 72.

Leo Wallerstein, founder and board chairman of Wallerstein Co., Inc. and head of Wallerstein Laboratories, died November 6.

Rupert C. Aycock of Fidelity Machine Co., Inc., died November 11, after a brief illness, at the age of 79.

Celaperm Black Yarn Prices

Denier and Filaments	Intermediate Twist 4 & 6-Lb. Cones	Beams	Spinning Twist Cones	Beams
55/15	$1.17	$1.18	$1.11	$1.12
75/20	1.14	1.15	1.08	1.09
100/26	1.08	1.09	1.02	1.03
120/40	.99	1.00	.93	.94
150/40	.91	.92	.86	.87
200/52	.85	.86	.81	.82
300/80	.81	.82	.77	.78
450/120	.79	.80	.75	.76
600/160	.77	.78	....	....
900/80	.74	....	....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.
Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

Acetate

Denier & Filament	Intermediate Twist 2 & 4 Lb. 5/8" Tubes	4-6 Lb. Twist Tubes	Cones	Beams	Low Twist Cones	Beams	Zero Twist Tubes	Beams
45/13/24			1.12	1.13		1.07	1.05	
55/18/24			.99	1.00		.94	.875	.935
75/24		.93	.95	.96	.89	.90	.79	.89
75/50		.95	.97	.98			.84	
100/32		.89	.91	.92	.85	.86	.77	
100/66			.93	.94			.79	
120/40/50		.81	.82	.83	.76	.77	.73	
150/16			.78	.79			.69	
150/40		.74	.74	.75	.69	.70	.66	.69
200/60		.70	.70	.71	.66	.67	.65	
240/80			.68					
300/80	.66	.66	.66	.67	.62	.63	.60	.62
450/120	.64	.64	.64	.65	.60	.61		
600/160	.62	.62	.62	.63	.59	.60		
900/44/70/240	.60	.60	.60	.61	.59	.60	.58	
1800/88	.61	.61	.61	.62	.60	.61		
2700/132/210	.61	.61	.61	.62	.60	.61		
3200/160/210	.61		.61	.62				

A. 1# 5/8" Tubes—add .02 to 2 & 4 lb. 5/8" Tubes Price.
B. Regular Twist (3 thru 5 t.p.i.)—add .02 to Intermediate Twist Price.
C. 2 lb. Twisted Tubes—.01 less than 4 & 6 lb. Twisted Tubes on 150-200-300 Denier Intermediate Twist.

Color-Sealed

Denier	Intermediate Twist Twisted Tubes 2 Lb.	4 & 6 Lb.	Cones	Beams	Low Twist Cones	Beams	Zero Twist Tubes	Beams
55/18			1.37	1.38		1.32	1.245	1.315
75/24			1.34	1.35	1.28	1.29	1.18	1.28
100/32	1.26	1.26	1.28	1.29	1.22	1.23	1.14	
150/40	1.10	1.11	1.11	1.12	1.06	1.07	1.03	1.06
200/60	1.04	1.05	1.05	1.06	1.01	1.02	1.00	
300/80	1.00	1.01	1.01	1.02	.97	.98	.95	.97

A. Regular Twist—add .02 to intermediate twist prices.

Black

Denier	Intermediate Twist 2 & 4 Lb. 5/8" Tubes	4 & 6 Lb. Twisted Tubes	Cones	Beams	Low Twist Cones	Beams	Zero Twist Tubes	Beams
55/18			1.17	1.18	1.11	1.12	1.045	1.115
75/24		1.12	1.14	1.15	1.08	1.09	.98	1.08
100/32		1.06	1.08	1.09	1.02	1.03	.94	
150/40		.91	.91	.92	.86	.87	.83	.86
200/60		.85	.85	.86	.81	.82	.80	
300/40-80	.81	.81	.81	.82	.77	.78	.75	.77
450/120	.79		.79	.80	.75	.76		
600/160	.77		.77		.73			
900/44-70-240								
1800/88	.74		.74		.73			
2700/132-210	.74		.74		.73			
3000/210								

A. Regular Twist (3 thru 5 t.p.i.)—add .02 in intermediate twist prices.
B. 2 lb. Twisted Tubes are the same as 4 & 6 lb. except on 150-200 and 300 denier intermediate twist where the price is .01 less.
C. 1 lb. 5/8" Tubes—add .02 to 2 and 4 lb. 5/8" Tubes.
Terms: Net 30 Days.
Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Eastman Chemical Products, Inc.

Tennessee Eastman Co.
Effective December 19, 1955

Estron Yarn, Bright or Dull — White

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Tubes	Beams	Low Twist Cones	Beams	Zero Twist Tubes
55/13	$1.01	$0.99	$0.97	$1.00	$0.93	$0.94	$0.87½
75/19	.97	.95	.93	.96	.89	.90	.79
75/49	.99	.97	.95	.98			
100/25	.93	.91	.89	.92	.85	.86	.77
120/30	.86	.84	.82	.85	.78	.79	
150/38	.76	.74	....	.75	.69	.70	.66
200/50	.72	.70	....	.71	.66	.67	
300/75	.68	.66	....	.67	.62	.63	.60
450/114	.66	.64	....	.65	.60	.61	
600/156	.64	.62	....	.63	.59	.60	.60
900/230	.62	.60	....	.61	....	....	.58
900 & Heavier	....	....	....	....	....	....	.58

Current Prices

Chromspun—Standard Colors (Except Black)

Denier & Filament	Regular Twist Cones	Beams	Intermediate Twist Cones	Beams	Low Twist Cones	Beams
55/13	$1.39	$1.40	$1.37	$1.38	$1.31	$1.32
75/19	1.36	1.37	1.34	1.35	1.28	1.29
100/25	1.30	1.31	1.26	1.29	1.22	1.23
150/38	....	....	1.11	1.12	1.06	1.07
300/75	....	....	1.01	1.02	.97	.98
450/114	....	....	.99	1.00	.95	.96
900/230	....	..	.94	.95	....	....

Current Prices

Chromspun—Black

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Beams	Low Twist & Spun Twist Beams
55/13	$1.19	$1.17	$1.18	$1.12
75/19	1.16	1.14	1.15	1.09
100/25	1.10	1.08	1.09	1.03
150/38	.93	.91	.92	.87
200/50	.87	.85	.86	.82
300/75	.83	.81	.82	.78
450/114	.81	.79	.80	.76
900/230	.76	.74	.75	....

Prices are subject to change without notice.
Prices on special items quoted on request.
Terms: Net 30 days. Payment—U. S. A. dollars.
Transportation charges prepaid or allowed to destination in the United States east of Mississippi River. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

RAYON STAPLE and TOW

American Viscose Corp.

Current Prices

Rayon Staple

	Bright and Dull
Regular	$ .32
Extra Strength	
1.0 Denier	.34
"Viscose 32A"	.36
"Avisco Crimped"	
1.25 Denier	.34
3.0 & 5.5 Deniers	.33
8.0 & 15.0 Deniers	.35
"Avisco Smooth"	
8.0, 15.0 & 22.0 Deniers	.37
Short Staple Blend	.34

Rayon Tow

Grouped Continuous Filaments (200,000 Total Denier)	
1.5, 3.0 & 5.5 Denier Per Filament	.34
9.0 Denier Per Filament	.36
Grouped Continuous Filaments (4400/300 & 2000/1500)	.65

Prices of other descriptions on request.
Terms: Net 30 days.

Celanese Corp. of America

Current Prices

Rayon Tow

	Bright & Dull
1.5, 3, 5 D.P.F.	.34
8 D.P.F.	.36

Courtaulds (Alabama) Inc.

Effective April 23, 1956

Rayon Staple

	Bright	Dull
1½ and 3 denier	$.31	$.31

Available in 1⅛", 1-9/16" and 2".

Fine Count Yarns

(Continued from Page 46)

Roving

All experience to date with processing 1.0 denier, 1½ inch Orlon staple to 60/1 c.c. yarn has involved two roving stages. Both Saco-Lowell FS-2 and Whitin frames have been used. The following are settings for Whitin equipment:

	1ST ROVING	2ND ROVING
Machine	Whitin Interdraft	Whitin 3/3
Bobbin Size	9″ x 4½″	8″ x 4″
Roving Produced	2.0 H.R.	6.0 H.R.
Twist Multiple	0.76	1.03
Front Roll Dia.	1⅛ in.	1¼ in.
Front Roll RPM	150	135
Roll Setting (1-2)	1¾ in.	1¾ in.
(2-3)	—	1 15/16 in.
(3-4)	1 15/16 in.	—

NOTE: *With a Saco-Lowell FS-2, .060″ top roll buttons and large condenser trumpets may be needed.*

Spinning

One denier, 1½ inch Orlon has processed satisfactorily on the Whitin long-draft system (F-2) using standard 1½ inch settings. It has also processed satisfactorily on Saco-Lowell Z-2 spinning. Moderate spindle speeds of 8000-9000 RPM have been used, although higher speeds may also prove practical.

Twist

Laboratory experience has indicated that maximum strength for 60/1 c.c. yarns produced from both 100% 1.0 denier Orlon and in a blend with 15% Egyptian cotton is obtained with 22 tpi to 23.5 tpi (2.8 to 3.0 twist multiple). However, for weaving purposes, higher twist levels may be desirable to reduce yarn fuzz and to increase the yarn elasticity.

Satisfactory fabrics have been produced using warp yarns with 31.5 tpi (4.1 twist multiple), and filling yarns with 27 tpi (3.5 twist multiple). Although a slight reduction in yarn strength will result from these higher twist levels, the advantages of reduced yarn fuzziness and increased elasticity should offset the strength loss.

The data reported above was prepared by the Du Pont Co. and is believed by it to be the best available on the subject. Du Pont cautions, however, that it is subject to revision as additional knowledge and experience are gained. Du Pont states that it makes no guarantee of the results and assumes no obligation or liability in connection with this information.

Improved Acetate Fiber

A new form of acetate fiber, Eastman "50", available in both Estron and Chromspun, has been introduced by Eastman Chemical Products, Inc., a subsidiary of Eastman Kodak Co. It was developed and will be produced by Eastman Chemical's corporate associate, Tennessee Eastman Co. The new yarn is priced the same as conventional Estron and Chromspun and delivered in the same put-ups.

Compared with conventional forms of acetate yarns in fabrics of identical constructions, the Eastman "50" is reported to cover better, with from 5 to 10% greater bulk; give a crisper, firmer hand along with a smoother feel. The new yarn also yields cloth of equal or better fabric tear strength. It has from 3 to 5% greater insulation, and longer retention of fabric characteristics. Dyeing and finishing of fabrics made of Eastman "50" yarn is handled in the same manner as regular forms of acetate.

"Coloray" Spun Dyed Rayon Staple

	1½ Den. 1-9/16"	3 Den. 2"	4½ Den. 6"	Price per Lb.
	(Code numbers for color and denier)			
Black	1404	1419	1425	37¢
Tan	8004	8019	8025	39¢
Medium Brown	8804	8819	8825	39¢
Silver Grey	1004	1019	1025	39¢
Terra Cotta	8204	8219	8225	39¢
Khaki	3004	3019	3025	40¢
Dark Brown	8604	8519	8525	40¢
Slate Grey	0804	0819	0825	43¢
Light Blue	4004	4019	4025	44¢
Sulphur	2004	2019	2025	44¢
Apple Green	5104	5119	5025	45¢
Peacock Blue	4604	4619	4625	46¢
Medium Blue	4204	4219	4225	48¢
Dark Blue	4404	4419	4425	49¢
Hunter Green	5404	5419	5425	49¢
Indian Yellow	2504	2519	2525	49¢
Pink	6004	6019	6025	50¢
Turquoise	4804	4819	4825	50¢
Malachite Green	5204	5219	5225	51¢
Red	7004	7019	7025	56¢

(In addition to the above, Black is also available in:
1½ den. 1⅛" (1401) 3 den. 1-9/16" (1416) 4½ den. 2"
3 den. 1⅛" (1413) 3 den. 2⅛" (1420) 4½ den. 4")

Terms: Net 30 days, f.o.b. LeMoyne, Alabama. Minimum transportation allowed to points in U.S.A. east of Mississippi River.

The Hartford Rayon Co.
Div. Bigelow-Sanford Carpet Co., Inc.

Rayon Staple

Effective February 8, 1956

REGULAR

1.5 denier Bright
1½" and 2" ..... 32¢

VISCALON 66 (Crimped)

8 denier 2" Bright ..... 35¢
15 denier 3" Bright ..... 35¢
15 denier 3" Dull ..... 35¢

"KOLORBON"—Solution Dyed Rayon Staple

	8 Denier Bright	15 Denier Dull	15 Denier Bright
Cloud Grey	45¢	45¢	....
Sandalwood	45¢	45¢	....
Nutria	45¢	45¢	....
Sea Green	45¢	45¢	....
Mint Green	45¢	45¢	....
Champagne	45¢	45¢	....
Cafe Brown	....	....	55¢
Midnight Black	....	....	45¢
Gold	48¢	48¢	....
Turquoise	45¢	45¢	....
Melon	48¢	48¢	....
Light Blue	45¢	45¢	....
Charcoal Grey	45¢	45¢	....

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

ACETATE STAPLE and TOW

Celanese Corp. of America
Current Prices

Staple

Celanese Acetate Staple	Bright & Dull
2, 3, 5.5 & 8 Individual Deniers	$.32
12 & 17 Individual Deniers	.33
35 & 50 Individual Deniers	.36
⅝" to ⅞" cut length (all deniers)—Premium	.03
Variable Acetate Fibers	.30
35 Individual Denier Flat Filament Acetate	.38

Tow

Celanese Celatow Acetate	Bright & Dull
2, 3, 5.5 & 8 Individual Deniers	$.34
12 & 17 Individual Deniers	.35
35 & 50 Individual Deniers	.37

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.
All previous prices withdrawn.

NON CELLULOSIC YARN

NYLON

Allied Chemical and Dye Corporation
"Caprolan" Tensile Tough Nylon

Effective September 24, 1956

Heavy Yarns

Denier	Filament	Turn/In.	Twist	Type**	Package	Price/Lb.
2100	408	0	0	HB	Paper Tube*	$1.27
2100	112	0	0	HB	Paper Tube	1.30
2500	408	0	0	HB	Paper Tube	1.27
2500	112	0	0	HB	Paper Tube	1.30
3360	544	0	0	HB	Paper Tube	1.26
3360	168	0	0	HB	Paper Tube	1.29
4200	680	0	0	HB	Paper Tube	1.26
4200	224	0	0	HB	Paper Tube	1.29
5000	816	0	0	HB	Paper Tube	1.25
5000	280	0	0	HB	Paper Tube	1.28
7500	1224	0	0	HB	Paper Tube	1.24
10,000	1632	0	0	HB	Paper Tube	1.24
15,000	2448	0	0	HB	Paper Tube	1.23

Terms—Net 30 days.
These prices are subject to change without notice. All prices are quoted F.O.B. shipping point.
Lowest freight cost prepaid or allowed east of Mississippi River.
* Paper Tubes non-returnable, no charge. Standard Put-up: 10 lb. package.
** Type is used to describe luster and tenacity.
Type HB: High Tenacity, Bright.

American Enka Corporation
Nylenka Filament Yarn Prices

Effective March 16, 1956

Denier & Filament	Twist	Luster	Type	Tenacity	Package	Yarn Weight per Package	Price per Pound, Std.	Price per Pound, Sub.
15/1	0.5Z	semi-dull	9402	Normal	Pirn	1 lb.	$5.00	$4.80
30/6	0.5Z	semi-dull	9414	Normal	Pirn	2 lb.	2.25	2.10
30/8	0.5Z	semi-dull	9424	Normal	Pirn	2 lb.	2.25	2.10
40/8	0.5Z	semi-dull	9426	Normal	Pirn	2 lb.	1.90	1.75
50/13	0.5Z	semi-dull	9442	Normal	Pirn	2 lb.	1.80	1.70
100/24	0.5Z	semi-dull	9628	Normal	Pirn	2 lb.	1.60	1.55
100/32	0.5Z	semi-dull	9652	Normal	Pirn	2 lb.	1.60	1.55
200/34	0.5Z	bright	9822	Normal	Pirn	2 lb.	1.45	1.40
200/34	0.5Z	bright	9222	Normal	Cone	4 lb.	1.45	1.40
210/34	0.5Z	bright	9204	High	Pirn	2 lb.	1.45	1.40
210/34	0.5Z	bright	9214	High	Cone	4 lb.	1.45	1.40
840/140	0.5Z	bright	9202	High	Pirn	2 lb.	1.30	1.20
840/140	0.5Z	bright	9208 9228	High	Cone	4 lb.	1.30	1.20
840/140	0.5Z	bright	9302	High	Beam	—	1.30	1.20

Pirns charged at $.25 each. Deposit refunded upon return of pirn in good condition. Cones are non-returnable. Beams and cradles are deposit carriers and remain property of American Enka Corporation.
Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination on or east of the Mississippi River. In prepaying transportation charges, seller reserves the right to select the carrier used.

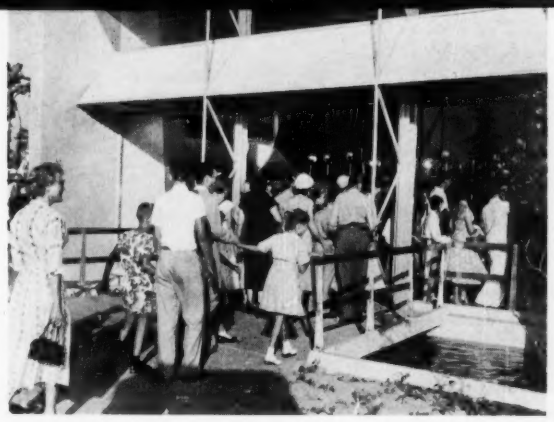
The Chemstrand Corp.
Current Prices
Effective December 20, 1956

Den./Fil.	Type	Package	Standard Quality	Second Quality
10/1	SD	Bobbins	$8.42	$7.81
15/1	SD	Bobbins	5.25	5.00
15/1	D	Bobbins	5.30	5.00
30/10	SD	Bobbins	2.36	2.21
40/7	SD	Bobbins	2.11	1.75
40/13	SD	Bobbins	2.01	1.81
40/13	D	Bobbins	2.06	1.81
50/17	SD	Bobbins	1.91	1.76
70/34	SD	Bobbins	1.71	1.66
70/34	B	Bobbins	1.71	1.66
70/34	HTB	Bobbins	1.76	1.66
80/26	SD	Bobbins	1.71	1.56
100/34	SD	Bobbins	1.65	1.56
100/34	HTB	Bobbins	1.70	1.60
140/68	SD	Bobbins	1.60	1.55
200/34	B	Bobbins	1.49	1.44
210/34	HTB	Bobbins	1.49	1.44
210/34	HTB	Beams	1.54	....
260/17	HTB	Bobbins	1.49	1.39
420/68	HTB	Bobbins	1.39	1.29
630/102	HTB	Bobbins	1.39	1.29
840/136	HTB	Bobbins	1.34	1.24
840/136	HTB	Tubes	1.34	1.24
840/136	HTB	Beams	1.34	....

15 denier on tricot spools 11 cents extra
40 denier on tricot spools 10 cents extra
70 denier on tricot spools 10 cents extra
The increases in prices are attributed to general increases in costs.
The price for 840 denier, 140 filament, all descriptions, remains unchanged as follows:

840/140	HTB	Beams	1.30	1.20
840/140	HTB	Tubes	1.30	1.20

* *Types:* D—Dull; SD—Semi-dull; B—Bright; H—High tenacity.
Bobbins are invoiced at 25¢ or 45¢ each, depending on type; tubes are invoiced at 40¢ each; spools invoiced at $77.00 and $95.00 depending on type; and beams and crates for beams are invoiced at $220 and $25 respectively.
Prices subject to change without notice.



GRUELLING TEST—Firth's 100% Tuftwoven Acrilan rug at entrance to Hall of Chemistry at Disneyland. It was in perfect condition after pounding of 300,000 feet.

Acrilan and Dynel Carpets Appear

Man-made fibers last month made new gains in the carpet industry. Floor coverings, which in recent years have been made increasingly of synthetic fibers, notably rayon and nylon, are now being produced from 100% Acrilan acrylic fiber and 100% Dynel, a copolymer of vinyl chloride and acrylonitrile. The carpets made with each fiber have a warm, resilient, impressively "wool-like" hand and appearance.

The carpets made with Chemstrand Corp.'s Acrilan were produced by Firth Industries, Inc., a wholly owned subsidiary of Firth Carpet Co. The Dynel carpets were introduced by C. H. Masland & Sons. Dynel is a product of Carbide & Carbon Chemicals Co.

Advantages of the Acrilan carpet, according to Harold Wadely, president of Firth and Edward A. O'Neal, Jr., president of Chemstrand, are these: good wear, resiliency of pile, twist retention of yarns (due to plasticity of the fiber), superior resistance to soiling, freedom from static, shedding and pilling.

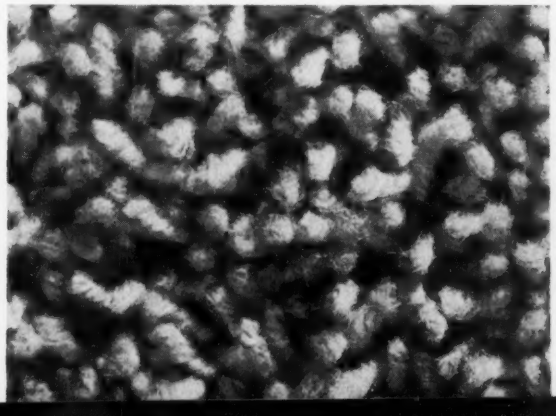
The new Acrilan carpet is the result of a two-year research and development effort conducted jointly by Chemstrand and Firth. The project resulted in production of a 15 denier Acrilan fiber specially engineered for use in carpet yarns, Mr. O'Neal said.

Extensive wear tests were conducted on carpets made with the new fiber, Mr. Wadely said. Installations of the carpet were made early in 1956 in 50 homes, each representing different wear conditions. A special Acrilan rug was installed at the entrance to Disneyland in California were it was walked on by 150,000 persons. The new Acrilan carpet is available in three different styles. Its suggested retail price is $12.95 a square yard.

Dynel in Two Qualities

In introducing Dynel in carpets, Masland has made use of the fiber in two qualities. One is a sculptured wilton at $13.95 a square yard retail and the second

(Continued on Page 83)



MAGNUM FRIEZE—Close-up view of Tuftwoven Acrilan broadloom carpet. It comes in ten different colors.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Yarn

Denier	Filament	Turn/In.	Twist	Type*	Package	1st Grade	2nd Grade
7	1	0	O	200	Bobbin	$9.00	$8.55
10	1	0	O	200	Bobbin	8.00	7.60
12	1	0	O	200	Bobbin	7.00	6.65
15	1	0	O	200	Bobbin	5.00	4.80
15	1	0	O	200	Tricot Beam	5.15	—
15	1	0	O	680	Bobbin	5.05	4.80
15	1	0	O	680	Tricot Beam	5.20	—
15	3	¼	Z	200	Bobbin	5.00	4.80
20	1	0	O	200	Bobbin	4.00	3.80
20	7	½	Z	200	Bobbin	2.75	2.55
20	7	½	Z	680	Bobbin	2.80	2.55
20	20	¾	Z	209	Bobbin	6.00	—
30	10	½	Z	100/200	Bobbin	2.25	2.10
30	10	½	Z	200	Tricot Beam	2.35	—
30	10	½	Z	680	Bobbin	2.30	2.10
30	10	½	Z	680	Tricot Beam	2.40	—
30	26	½	Z	200	Bobbin	2.35	2.10
40	7	½	Z	200	Bobbin	2.00	1.75
40	13	½	Z	100/200	Bobbin	1.90	1.75
40	13	½	Z	200	Tricot Beam	2.00	—
40	13	½	Z	400	Bobbin	2.00	1.85
40	13	½	Z	670/680	Bobbin	1.95	1.75
40	13	½	Z	670/680	Tricot Beam	2.05	—
40	34	½	Z	200	Bobbin	2.00	1.80
50	7	½	Z	200	Bobbin	1.90	1.70
50	17	½	Z	200	Bobbin	1.80	1.70
50	17	½	Z	670/680	Bobbin	1.85	1.70
60	20	½	Z	200	Bobbin	1.70	1.60
70	17	½	Z	100/200	Bobbin	1.60	1.55
70	34	½	Z	100/200	Bobbin	1.60	1.55
70	34	½	Z	300	Bobbin	1.65	1.55
70	34	½	Z	680	Bobbin	1.65	1.55
80	26	½	Z	200	Bobbin	1.60	1.55
80	68	½	Z	200	Bobbin	1.65	1.55
100	34	½	Z	100/200	Bobbin	1.60	1.55
100	34	½	Z	300	Bobbin	1.65	1.55
100	34	½	Z	680	Bobbin	1.65	1.55
100	50	½	Z	200	Bobbin	1.60	1.55
140	68	½	Z	100/200	Bobbin	1.55	1.50
140	68	½	Z	300	Bobbin	1.60	1.50
200	34	¾	Z	100/200	Bobbin	1.45	1.40
200	34	¾	Z	680	Bobbin	1.50	1.40
200	68	¾	Z	100/200	Bobbin	1.45	1.35
210	34	¾	Z	300	Bobbin	1.45	1.40
210	34	¾	Z	300	Beams	1.50	1.45
260	17	1	Z	100	Bobbin	1.45	1.35
260	17	1	Z	300	Bobbin	1.45	1.35
400	68	¾	Z	100	Bobbin	1.35	1.25
420	68	¾	Z	300	Bobbin	1.35	1.25
780	51	½	Z	300	Bobbin	1.35	1.25
800	140	½	Z	100	Bobbin	1.35	1.25
840	136	1	Z	300	Bobbin	1.30	1.20
840	140	½	Z	300/700	Alum. Tube/ Beam	1.30	1.20
Color-Sealed Yarn							
70	34	½	Z	140	Bobbin	1.95	1.90
200	34	¾	Z	140	Bobbin	1.80	1.75
Industrial Yarn						Price/Lb.	
2520	420	0	O	300/700	Paper Tube	$1.27	
4200	700	0	O	300/700	Paper Tube	1.25	
5040	840	0	O	300/700	Paper Tube	1.25	
7560	1260	0	O	300/700	Paper Tube	1.24	
15120	2520	0	O	300/700	Paper Tube	1.23	

These prices are subject to change without notice.

Terms—Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Following are invoiced as a separate item:

Bobbins at 25 cents or 45 cents each depending on type.

Aluminum Tubes at 40 cents each.

Tire Cord Beams (Domestic Shipments) $220 each.

Cradles for Tire Cord Beams (Domestic Shipments) $115.00 each.

(Beams and Cradles are deposit carriers and remain the property of E. I. du Pont de Nemours & Co.)

Types

* Type is used to describe luster, tenacity, and size or oil content.

Type 100 Bright, normal tenacity.
Type 200 Semidull, normal tenacity.
Type 209 Semidull, normal tenacity, #S-139 spin finish.
Type 300 Bright, high tenacity.
Type 400 Semidull, high tenacity.
Type 670 Dull, normal tenacity.
Type 680 Dull, normal tenacity.
Type 700, Bright, high tenacity.
Type 140, Color-sealed, Black, normal tenacity.

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Dacron"*

Den.	Fil.	Twist	Luster	Type	Tubes 1st Gr.
30	20	0	Dull	57	$2.75
40	27	0	Semi-Dull	56	2.30
40	27	0	Dull	57	2.35
70	14	0	Bright	55	1.90
70	34	0	Semi-Dull	56	1.90
70	34	0	Bright	55	1.90
70	34	0	Dull	57	1.95
100	34	0	Semi-Dull	56	1.85
140	28	0	Bright	55	1.80
150	68	0	Semi-Dull	56	1.80
220	50	0	Bright	51	1.75
250	50	0	Bright	55	1.75
1100	250	0	Semi-Dull	59	1.50
1100	250	0	Bright	51	1.50

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Yarn Types

51 Bright High Tenacity
56 Semi-Dull Normal Tenacity
57 Dull Normal Tenacity
55 Bright Normal Tenacity
59 Semi-Dull High Tenacity

Tubes are invoiced as a separate item at $.70 or $.80 each and are returnable for credit.

* "DACRON" is DuPont's registered trade-mark for its polyester fiber.

NON CELLULOSIC STAPLE & TOW

ACRYLIC

The Chemstrand Corp.

Current Prices

"Acrilan"

2.0 denier Semi-dull staple and tow	$1.18
2.5 denier Hi-Bulk Bright and Semi-dull staple and tow	1.12
3.0 denier Bright & Semi-dull staple and tow	1.12
5.0 denier Bright & Semi-dull staple and tow	1.12
8.0 denier Bright and Semi-dull staple and tow	1.12
Hi-Bulk staple Semi-dull	1.12

Terms: Net 30 days. Freight prepaid to points east of the Mississippi River.

Carbide and Carbon Chemicals Co.

Div. Union Carbide and Carbon Corp.

Textile Fibers Dept.

Effective November 1, 1955

Dynel Staple

Natural Dynel	
3, 6, 12, and 24 Denier, Staple and Tow	$1.05 per lb.
Whitened Dynel, and Dynel Spun with Light Colors: Blonde, or Gray	
3 and 6 Denier, Staple and Tow	1.20 per lb.
Dynel Spun with Dark Colors: Black, Charcoal, and Brown	
3 and 6 Denier, Staple and Tow	1.30 per lb.

Prices are quoted f.o.b. South Charleston, W. Va.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Orlon"** Acrylic Staple & Tow

Denier	Price 1st Grade
1.0 Denier Semidull & Bright (Staple only)	$1.48
2.0 Denier Semidull	1.33
3.0 Denier Semidull & Bright	1.28
3.0 Denier Semidull Color-sealed Black	1.63
4.5 Denier Semidull	1.20
6.0 Denier Semidull & Bright	1.20

Staple Lengths—1½", 2", 2½", 3", 4½".

High Shrinkage Staple same price as Regular Staple.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

** "ORLON" is DuPont's registered trade-mark for its acrylic fiber.

Eastman Chemical Products, Inc.
Tennessee Eastman Co.

Effective November 15, 1956

Verel

Deniers	Dull and Bright
2, 3, 5 and 8	$1.10 per pound

Prices are subject to change without notice.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in the United States east of the Mississippi River. Seller reserves the right to select route and method of shipment. If buyer requests and seller agrees to a route or method involving higher than lowest rate buyer shall pay the excess of transportation cost and tax.

NYLON

American Enka Corp.

Nylenka (Nylon Six Staple)

Denier	Luster	Length (Inches)	Price per pound
3	semi-dull	1⅛, 1½, 2, 2⅝, 3, 4½	$1.25
6	bright	3, 4½	1.25
8	bright	2⅝	1.20
10	bright	3	1.20
15	bright	3	1.20

Deniers and lengths of staple not listed above are available upon special request.

Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination on or east of the Mississippi River. In prepaying transportation charges, seller reserves the right to select the carrier used.

First Darlan Sweater

Ladies' sweaters made of Darlan, B. F. Goodrich Chemical Co.'s new polyvinylidene chloride-dinitrile fiber will soon be placed on the market as a test. They are knitted on 21 gauge full-fashioned units and come in aqua, pink, tan, and yellow. The sweaters are Shetland-type in texture and the hand becomes progressively softer after repeated washings.

Acrilan and Dynel Carpets

(Cont. fr. p. 81)

is a contract velvet carpet. According to Masland, the advantages of Dynel in carpets are: great strength, toughness, resistance to burning, molds, mildew and damage from a variety of chemicals. According to the company extensive testing has shown that Dynel carpets are longer wearing than wool and more soil-resistant than wool.

Masland has also brought out a carpet made with nylon continuous filament yarn bulked by the "Tycora" process of the Textured Yarns Co. In a tufted looped pile construction the new carpet retails for $13.95 a square yard. Masland has also introduced a new woven carpet made of an improved nylon staple fiber developed by the Du Pont Co.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

Nylon Staple and Tow

Denier	Length	Type*	Price/Lb.
1.5	1⅛"—1½"—2"—2½"	200	$1.33
1.5	1⅛"—1½"—2"—2½"	201	1.35
3.0	1⅛"—1½"—2"—2½"—3"—4½"	100/200	1.28
3.0	1⅛"—1½"—2"—2½"—3"—4½"	101/201	1.30
6.0	1⅛"—1½"—2"—2½"—3"—4½"	100	1.28
6.0	1⅛"—1½"—2"—2½"—3"—4½"	101	1.30
15.0	1½"—3"—4½"—6½"	100	1.20
15.0	1½"—3"—4½"—6½"	101	1.22

Tow price same as Staple for:
3.0 denier type 100/200 in 430,000 total denier
3.0 denier type 101/201 in 455,000 total denier
6.0 denier type 100 in 330,000 total denier
6.0 denier type 101 in 345,000 total denier
15.0 denier type 100 in 330,000 total denier
These prices are subject to change without notice.
Terms: Net 30 Days.
Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Types

* Type is used to describe luster, tenacity, not crimpset, or crimpset.
Type 100 Bright, normal tenacity, not crimpset.
Type 101 Bright, normal tenacity, crimpset.
Type 200 Semi-dull, normal tenacity, not crimpset.
Type 201 Semi-dull, normal tenacity, crimpset.

Industrial Rayon Corp.

Effective November 29, 1956

Nylon Staple

1.5 denier	$1.33 per lb.
2, 3 and 6 denier	1.28 per lb.
8 and 15 denier	1.20 per lb.

Bright and semi-dull, required length.
Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

"Dacron"* Staple and Tow

Den.	Luster	Type	Staple Length	Tow Bundle	1st Gr
1.25	Semi-Dull	54	1¼"-3"	385M	$1.56
1.5	Semi-Dull	54	1¼"-4½"	385M	1.51
3.0	Semi-Dull	54	1¼"-4½"	385M	1.41
4.5	Semi-Dull	54	1¼"-4½"	385M	1.41
6.0	Semi-Dull	54	1¼"-4½"	385M	1.41

Terms: Net 30 Days.
Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.
* "DACRON" is DuPont's registered trade-mark for its polyester fiber.

POLYVINYL ACETATE

American Viscose Corp.

Effective October 1, 1956

"Vinyon"® Staple

3.0 denier ½" unopened	$.80 per lb.
3.0 " 1¼" unopened	.80 per lb.
3.0 " 1¼" opened	.90 per lb.
3.0 " 2" opened	.90 per lb.
3.0 " 2" unopened	.80 per lb.
5.5 " 1" opened	.90 per lb.
5.5 " 3½" opened	.90 per lb.
5.5 " 3½" unopened	.80 per lb.

Terms: Net 30 days.

PROTEIN

Virginia-Carolina Chemical Corp.

Fiber Division
Effective January 15, 1951

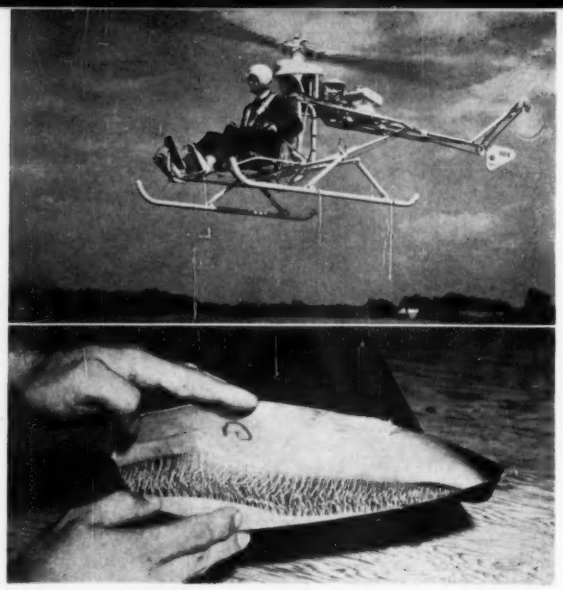
"Vicara" Staple

	Standard Crimp	Highly Crimped
3 Denier	$1.00 per lb.	$1.05 per lb.
5 Denier	1.00 per lb.	1.05 per lb.
7 Denier	1.00 per lb.	1.05 per lb.

Bleached "Vicara" Staple

	Standard Crimp	Highly Crimped
3 Denier	$1.10 per lb.	$1.15 per lb.
5 Denier	1.10 per lb.	1.15 per lb.
7 Denier	1.10 per lb.	1.15 per lb.

Staple length ⅛ to 6 in.
Supplied in staple lengths or as continuous tow (270,000 filaments).
Terms: Net 30 days.
Prices f.o.b. Taftville, Conn. on 10% moisture regain basis.



Above: Cloth helicopter blade in action. Below: Close-up of blade fabric.

Cloth Helicopter Blades

Goodyear Aircraft Corp. is now working under contract with the U. S. Navy Bureau of Aeronautics on the development of fabric rotor blades for helicopters and convertiplanes. The program now under way will demonstrate lifting characteristics of Airmat fabric blades in one-man helicopter operations. The fabric blades are the result of the combined efforts of fabric engineers at Goodyear Tire & Rubber Co. and Goodyear Aircraft.

A typical Airmat structural member consists of two basic layers of high-strength cloth which are woven simultaneously with drop threads interconnecting the layers. Length of the drop threads determine the inflated contour of the section. After weaving, the basic cloths are coated and cover layers applied to obtain pressure-tight surfaces of the desired strength. This type of fabrication lends itself to high production rates and correspondingly low costs.

Rayon, Nylon Price Rises

Price increases in rayon and nylon were announced last month by a number of yarn producers. Effective December 3, American Viscose Corp. raised prices for its coarser deniers of rayon filament yarn, both in regular high strength and in Rayflex textile high strength three cents a pound, making its 200 denier yarn 82 cents a pound. Deniers affected are from 200 up through 2,700 in the regular strength and 400 through 900 in high strength. Deniers involved are used largely in home furnishings fabrics.

Effective December 4, American Enka Corp. raised prices 3 to 5 cents a pound for all textile filament rayon yarns, including Jetspun, regular and high tenacity, all deniers and put-ups.

American Enka's 3 and 6 denier nylon staple fiber also was increased 3 cents a pound, to $1.28. The 8, 10 and 15 deniers remain unchanged at $1.20 a pound.

Industrial Rayon Corp. increased the finer deniers of its new nylon staple fiber 3 cents a pound, effective November 29, with the 1.5 denier now $1.33 a pound, and the 2, 3 and 6 deniers $1.28. No change was made in Industrial Rayon's prices for heavier deniers.

Prices of continuous filament rayon yarns were increased by the Du Pont Co. effective December 10. Regular tenacity and Cordura rayon textile yarns of 150 denier and finer were increased five cents per pound, while 200 denier and coarser were raised three cents a pound.

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Make Your Reservations Now!

The April Issue of MTM will preview the Knitting Arts Exhibition in Atlantic City, April 29 to May 3, 1957.

For advertising space in this important issue write

MODERN TEXTILES MAGAZINE
303 Fifth Ave., N. Y. 16, N. Y.

Calendar of Coming Events

Jan. 23—AATCC New York Section symposium-lunch. Hotel Delmonico, New York, N. Y.
Jan. 28-29—National Cotton Council annual meeting. St. Louis, Mo.
Jan. 28-31—Plant Maintenance & Engineering Show, Cleveland, O.
Feb. 6—AATT monthly meeting. Vanderbilt Hotel, New York, N. Y.
Feb. 25-27—Textile Quality Control Conference. Georgia Tech., Atlanta, Ga.
Feb. 27-28—Cotton Research Clinic, sponsored by NCC, Savannah, Ga.
Mar. 6—AATT monthly meeting. Vanderbilt Hotel, New York, N. Y.
Mar. 14—Southern Textile Methods and Standards Association meeting. Clemson House, Clemson, S. C.
Mar. 14-15—Textile Research Institute annual meeting. Hotel Commodore, New York, N. Y.
Mar. 28-29—Textile Quality Control Association meeting. Clemson House, Clemson, S. C.
Apr. 3—AATT monthly meeting. Vanderbilt Hotel, New York, N. Y.
Apr. 4-6—American Cotton Manufacturers Institute annual meeting. Biltmore Hotel, Palm Beach, Fla.
Apr. 23-24—National Knitted Outerwear Association annual meeting. Hotel Waldorf-Astoria, New York, N. Y.
Apr. 29—Underwear Institute annual meeting. Traymore Hotel, Atlantic City, N. J.
Apr. 29-May 3rd—Knitting Arts Exhibition. Auditorium, Atlantic City, N. J.

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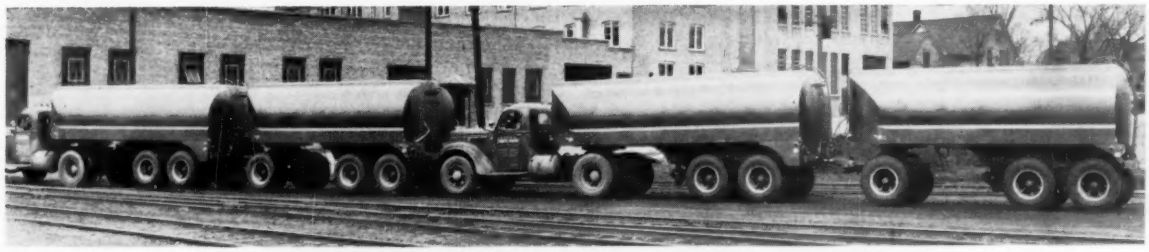

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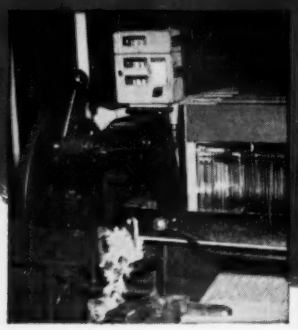
Eastern Division: 546 South Avenue, Garwood, N. J.

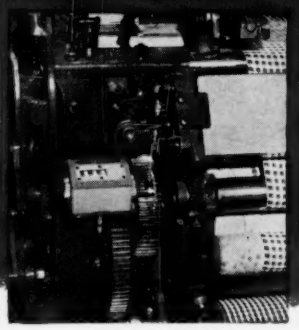
THIS COMPLETE VEEDER-ROOT "Countrol Package"

gives you AUTOMATIC UNIFORMITY all through your Mill . . . with New VEEDER-ROOT COUNTERS

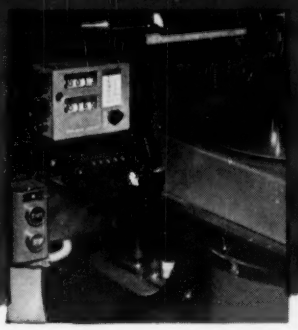
. . . on Looms | **. . . on Frames**



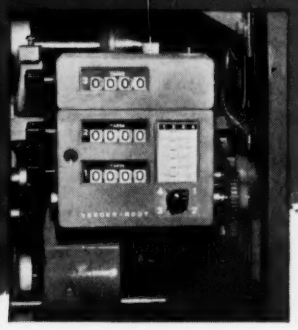
2-3-4 Pick Counter on Loom



Cut Meter on Loom



2-3-4 Hank Counter and Predetermining Counter on Drawing Frame



2-3-4 Yardage Counter and Predetermining Counter on Spinning Frame

On looms, 2-3-4 Pick Counters keep accurate production records and provide a basis for wage payment . . . while Cut Meters help maintain uniformity of cut-lengths of cloth, which is insisted upon today by the cutting-up trades.

On frames and other preparatory equipment, Hank, Yardage and Predetermining Counters hold can-variation to the minimum . . . and make it possible to run the largest economical packages.

This complete Veeder-Root "*Count*rol Package" adds up to better, automatic uniformity all through the mill. And that's why it pays *any* mill to get this Package of new and modern Veeder-Root Counters, when modernizing present machinery or buying new. Get in touch with the nearest Veeder-Root office *today*.

VEEDER-ROOT
INCORPORATED
"The Name that Counts"

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